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LAKE WINNIPEG, CHURCHILL AND NELSON RIVERS STUDY BOARD

APPENDIX 8 - SOCIAL AND ECONOMIC STUDIES, VOL. 1

A - SOCIAL AND ECONOMIC IMPACT STUDY OF THE LAKE WINNIPEG, CHURCHILL-NELSON RIVERS HYDRO DEVELOPMENT

THE SOCIAL AND ECONOMIC IMPACT STUDY
OF THE
CHURCHILL-NELSON RIVERS HYDRO DEVELOPMENT

by

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Winnipeg, Manitoba
June, 1974

for

THE LAKE WINNIPEG, CHURCHILL AND NELSON RIVERS STUDY BOARD

SPECIAL NOTE

THE CONCLUSIONS AND RECOMMENDATIONS CONTAINED IN THIS APPENDIX ARE THOSE OF THE AUTHOR(S) AND ARE NOT NECESSARILY THE SAME AS THE CONCLUSIONS AND RECOMMENDATIONS OF THE LAKE WINNIPEG, CHURCHILL AND NELSON RIVERS STUDY BOARD AS EXPRESSED IN THE SUMMARY REPORT AND THE TECHNICAL REPORT.

PREFACE

PREFACE

The task of evaluating the social and economic impact of the Nelson River Hydroelectric Development on the traditional northern communities has been regarded by the study team as a type of challenge which will become commonplace in the 1970's and 1980's. Effects on income and physical assets can be measured quite readily, but effects on lifestyle are now generally recognized as important factors even though no ready "formula" exists by which the change can be evaluated.

Attitudes of society are rapidly changing and changing in ways which yield many "old proven techniques" largely redundant and irrelevant. Consequently, many of the approaches of the academic disciplines are irrelevant in isolation and considerable stress is placed on the agencies and departments established on the basis of those disciplines insofar as the emerging needs of society are concerned. More simply, narrow concepts of economic efficiency, preservation of resources, growth, precedent, generally a "this is how we've always done it" attitude, are no longer acceptable.

"Quality of Life" is generally expressed as the real goal yet not everyone is shooting at the same net. This should not come as a surprise to anyone. Individuals have different values, aspirations, time horizons, and intensities of desire about all matters; hence, they see things differently and are not likely to agree unanimously that any one decision is the best or right one. Quality of life means different things to different people.

Henry David Thoreau put it more clearly when he said:

> If a man does not keep pace with his companions, perhaps it is because he hears a different drummer. Let him step to the music which he hears, however measured or far away.

Therefore, it seems more appropriate to stress community decision-making processes in place of quantification of effects. Community decision-making skills and an effective two-way communications mechanism are processes so basic that the real and deep impacts from the hydro development, as well as from the resulting compensation, will be directly related to the effectiveness of these processes.

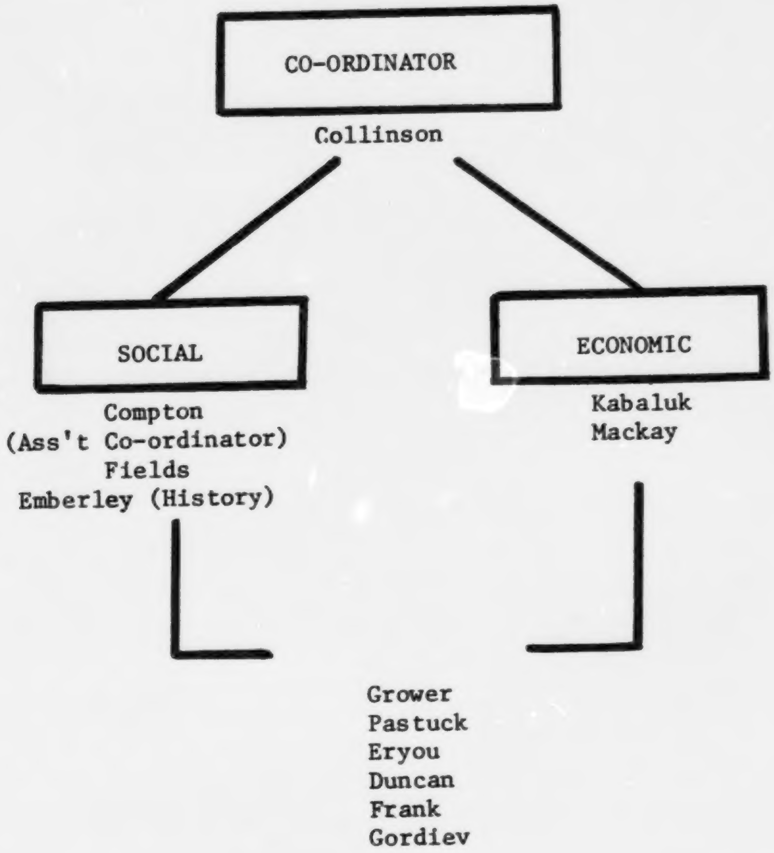
The concept of process itself is important. Too often the simplistic notions of start and finish, or pass and fail, are applied to situations where each "solution" attempted quickly becomes another interacting variable of a larger continuing process. Dynamics and processes are not as "neat" to deal with as statics and equilibrium, but they much more adequately portray the realities of modern society. In this sense, this "final" report represents one simple step in what, in fact, is a continuing process of social change in northern communities.

The study team tried to respect this ongoing reality by advising interested individuals and agencies about issues as they arose. In effect, the team adopted the necessary function of gathering and disseminating vital and timely information. This approach has the advantage of making each emerging issue an integral part of the process, rather than a component of a report which may be partly irrelevant by the time it is printed. However, there is an inherent danger that expectations based on this function will be frustrated by dissolution of the team upon completion of the report. This is not to imply that the study team should be continued, but rather that the role they performed in the process must be picked up by another agency.

Special thanks are due to the Chiefs, Mayors and Councillors of the communities contacted by the study team. Not only did they sanction the study team activities within their communities, they actively participated and invested considerable time and effort in the study. This manifestation of their concern, interest and commitment to their responsibility reflects the existence of the basic ingredients essential to local decision-making and alleviation of stress.

J. D. Collinson,
Assistant Deputy Minister,
Department of Mines, Resources
and Environmental Management.

SOCIAL AND ECONOMIC IMPACT STUDY TEAM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- -Simulated model for a fisheries operation

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Figure 1

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ACKNOWLEDGEMENTS

Many agencies, and individuals have contributed to this study. A good deal of information and advice was gathered in personal interviews, meetings and informal discussions with government and private agencies. In addition, there was extensive use of data provided in numerous written reports. Acknowledgement of each individual contribution is not possible. We therefore extend our appreciation collectively to all concerned.

We would particularly like to thank individuals within the communities as well as personnel from the Department of Mines, Resources and Environmental Management, the Department of Northern Affairs, and the Department of Indian Affairs and Northern Development, for their co-operation and assistance.

To Mrs. Connie Frank and Mrs. Marlene Gordiev go our special personal thanks for making the past months a pleasant experience through their congenial and diligent approach to the work and particularly for their tireless and patient effort in the typing and re-typing of this report.

Social & Economic Impact Study Team,
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Environmental Management.

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4	Simulation of Alternatives for the South Indian Lake Commercial Fishery
5	Cross Lake Community Profile
6	Nelson House Community Profile
7	Social & Economic Impact of the Nelson River Hydro Development (With Emphasis on South Indian Lake) Preliminary Report, June, 1973.

CHAPTER I

CONCLUSIONS

AND

RECOMMENDATIONS

CONCLUSIONS AND RECOMMENDATIONS

A. NORTHERN DEVELOPMENT IN GENERAL

Conclusions

The effects of hydro developments in the north cannot be considered in isolation from the general process of change which has been occurring in the remote communities of Manitoba's north in recent years. The Northern Affairs Act with its implications for increased and improved local services, including a local Community Council government; the adjacent industrial developments in mining and forestry; the development of new, modern towns; the increasing accessibility through winter roads, all-weather roads, air strips and scheduled air flights; and the proliferation of government programs and services; have all served to move the remote communities of ten years ago into a process of transition today.

As the "north" and "south" became more aware of each other, the disparities between them are increasingly apparent and the responsibilities of senior governments (federal and provincial) accentuated. The need for local services such as housing, electricity, roads, air strips, safe water supply, sewage, garbage disposal, education and health (including nutritional aspects) is now recognized. More significantly, the need for employment opportunities and greater community responsibility in decision-making has been surfacing. In this context, hydroelectric development has acted as a catalyst in that it causes needs to surface far more quickly than might otherwise have been the case.

Recommendations

1. THAT a long term Northern Development Program, with both federal and provincial inputs, be developed to deal with the needs of northern Manitoba communities.

   It is suggested that such a program be reviewed and discussed with all interested parties, but most particularly with each of the Northern Band and Community Councils as well as potential "developers" including federal and provincial agencies.

2. THAT technical assistance be made available to Community Councils for the development of decision-making, problem-solving, communications and community life skills.

3. THAT "developer" roles and responsibilities be clarified and made known so that potential developers are made aware of their responsibility to compensate for effects on infrastructure, livelihood, lifestyle, and local employment, as well as to manifest a respect for cultural differences, local authority, community decision-making, communication processes, etc.

4. a) THAT beginning immediately, northern settlements be adequately informed about all activities affecting their communities so that residents may achieve a better understanding of the implications of such activities.

   b) THAT the concerns of Band and Community Councils about employment, clean-up, location of facilities, etc., be given careful consideration as projects are implemented.

B. HYDROELECTRIC DEVELOPMENT

In addition to more general considerations connected with Northern Development, the Churchill River Diversion and Lake Winnipeg Regulation Projects have created a number of specific problems and impacts. The context in which these are presented is dynamic in that it attempts to recognize the changing conditions regarding employment, lifestyles, cultures and other aspects of northern life. Further, it is assumed that mitigation action is preferred to compensation, and that maintenance of traditional activities, such as trapping and fishing, is desirable for those who choose this lifestyle. Finally, an attempt is made to recognize explicitly that social-psychological stress created by rapid change is a relevant and, in some cases, urgent problem which, in part, has arisen as a result of the hydroelectric development.

1. THE STUDY PROCESS

Conclusion

This study has been undertaken during the construction phase. As a result, a number of groups have utilized, and probably will continue to utilize, information gathered by the study team for the purpose of dealing with issues related to the Churchill River Diversion and the Lake Winnipeg Regulation Projects. These groups include the Manitoba Cabinet Committee on Churchill-Nelson Hydro Development, the Advisory Committee to the Cabinet Committee, study auditors, information workers and compensation observers. The advisory role played by the social and economic study team will cease with the submission of this final report.

Recommendation

THAT a full-time staff reporting to the Manitoba Advisory Committee be provided to co-ordinate, analyze, monitor and advise on all matters related to the Churchill River Diversion and Lake Winnipeg Regulation Projects.

Specific ongoing issues which could be considered by this group include:

a) information/communication problems related to hydroelectric development with particular emphasis on the alleviation of stress,

b) mitigation and/or compensation issues, and

c) monitoring and analysis of ongoing social and economic changes related to hydroelectric development and, more generally, northern development.

2. TRADITIONAL LIFESTYLES

Conclusion

Although the traditional lifestyle of northern residents associated with hunting, trapping and fishing is becoming less predominant, there are a significant number of northerners who wish to pursue this way of life. The hydroelectric developments will have some adverse effects on activities associated with the traditional lifestyle.

Recommendation

THAT opportunities to maintain traditional lifestyles be sustained where preferred by local residents.

In those cases where hydro development has an adverse impact on activities related to traditional lifestyles, the developer would be responsible for arranging mitigation through such developments as:

a) the provision of transportation facilities, and other infrastructure,

b) support of wildlife and other programs, e.g., wild fur program, utilization of the fisheries simulation model, and

c) replacement or equivalent cash payment for property losses.

3. EMPLOYMENT OPPORTUNITIES

Conclusion

Local residents of affected communities have not taken full advantage of job opportunities provided by hydro development. There are significant job opportunities in the areas of hydro development, mining, and forestry for the foreseeable future; whereas there is little growth potential in the traditional activities of fishing, trapping and hunting.

Recommendation

1. THAT appropriate government agencies, e.g., the Federal-Provincial Northern Manpower & Employment Committee, co-operate with local representatives in developing effective programs to place northerners in northern jobs, with particular emphasis on the exploitation of opportunities in the areas of hydro development, mining, and forestry.

Elements of this "Employment Strategy" could be:

a) provision of transportation and other infrastructure to ensure increased labour mobility,

b) development of job training and family orientation programs geared to identified future employment opportunities, and

c) implementation of modified work environment programs to assist northern residents to exploit future job opportunities.

In addition to these general conclusions and recommendations, there are a number of community specific issues which are summarized on the following pages.

SUMMARY OF ANTICIPATED IMPACTS OF THE HYDRO DEVELOPMENT AFFECTING RESIDENTS OF THE FOLLOWING COMMUNITIES AND RECOMMENDED MITIGATION OPTIONS:

Remote Northern Communities

Cross Lake

Nelson House

South Indian Lake

Norway House

Split Lake and York Landing

Churchill

Ilford

Thompson

Leaf Rapids

Lake Winnipeg

COMMUNITY	IMPACT OR RATIONALE	MITIGATION OR COMPENSATION OPTIONS
ALL NORTHERN MANITOBA REMOTE COMMUNITIES	No "before and after modernization" nutritional survey has been done in Canada. Split Lake was studied at the "before" stage.	A nutritional study of the community of Split Lake be undertaken following completion of the Hydro development.
	There is evidence to suggest that industrialization can have detrimental effects on nutritional health due to a) decrease in use of land foods and b) use of "empty calorie" foods. The nutritional health of northern Canadian communities is below the Canadian average.	The use of traditional foods be encouraged by a) restricting non-native hunting in northern Manitoba and b) promoting programs for the trade and resale of land foods at community retail outlets. An information program be undertaken in Northern Manitoba remote communities to educate residents about nutrition, budgeting, storing, meal planning, food preparation, etc.
	At present, no museum operated by native people exists in Manitoba.	A native cultural centre or museum be established in northern Manitoba.
	If paid professionals were sent in to "head up" a museum project, it would be seen as being done "for" them. Also, paid professionals rarely remain long in remote areas and the project would lack continuity.	The role of outside agents be to offer advice and assistance and the museum be operated by native people with the sanction of all native organizations.

COMMUNITY	IMPACT OR RATIONALE	MITIGATION OR COMPENSATION OPTIONS
ALL NORTHERN MANITOBA REMOTE COMMUNITIES	Native people are interested in preserving their cultural heritage but attempts to date have been fragmentary, e.g., Manitoba Indian Brotherhood, Manitoba Registered Trappers Association, community school projects, etc.	University students from Native Studies programs funded by STEP be approached to undertake an initial awareness and promotion program about museums in northern Manitoba remote communities.
	Buildings are not readily available in remote communities.	Criteria for determining allotment of financial assistance for museums be altered to suit the special circumstances of remote northern communities e.g., provision of capital development funds.
	The National Museum Association has developed a native peoples course but to date it has not received funding. Trained personnel could generate employment for others by "heading up" projects.	Funding be made available for native peoples museum training course (s).
	The success of any museum is largely dependent on attracting a large spectrum of interests.	As many special interest groups as possible be invited to participate e.g., fishermen and trappers associations, mining companies, education groups, government departments, etc.
	There have been several instances of artifacts going to the United States.	Regulations regarding export of artifacts be strengthened.

COMMUNITY	IMPACT OR RATIONALE	MITIGATION OR COMPENSATION OPTIONS
CROSS LAKE	Although the Cross Lake residents have a general understanding of the impacts of the changes in water regime, they lack specific detailed knowledge. This has caused considerable distortion of the facts and exaggeration of anticipated resource impacts. In order for the community to plan for changes and participate meaningfully in decision-making regarding the impacts of the hydro development on their community, it must possess an accurate, current level of knowledge of the resource impacts expected.	At the discretion of and in consultation with the seven community Northern Flood Committee and the Cross Lake Band and Community Council, an information/communication process be established.
	The majority of residents of Cross Lake obtain information via "word of mouth" around the community or via radio (local station at Cross Lake (CFNC) or Thompson stations.	Advantage be taken of the local radio station CFNC to disseminate information re the Hydro development. One mechanism could be a series of phone-in question and answer programs.
	Cross Lake leadership is characterized by duality. The Chief and Band Council (treaty representatives) and Mayor and Council (non-Treaty representatives) tend to function by relating to their parent institutions and other outside agencies rather than to each other. This results in a lack of community planning and action. However, the impacts of the hydro development will affect the community as a whole.	Relevant government agencies and/or parent institutions be aware of the pitfalls of a dual sectorial leadership and attempt to co-ordinate their approach to the community and thus encourage integrated community planning and problem-solving.

COMMUNITY	IMPACT OR RATIONALE	MITIGATION OR COMPENSATION OPTIONS
CROSS LAKE	As a community becomes less isolated, decisions facing leaders become more complex. Eventually, a unit core of leaders is not capable of handling all decisions and must delegate some responsibilities to advisory and/or co-ordinating committees.	To facilitate community planning, advisory and/or co-ordinating committees be encouraged. The relevant government agencies and/or parent institutions provide information regarding the nature, function, technical expertise required and operation of joint planning or advisory committees. All advisory and/or co-ordinating committees be an integrated treaty and non-treaty entity.
	The problems associated with the duality of leadership and hydro development may be solved by developing integrated community planning committees. However, because of the interrelated nature of community components, change in one component may cause undesirable changes in others thus reducing community viability.	A monitoring program of non-physical change be set up at Cross Lake during the anticipated period of rapid changes and stress. Appropriate social intervention help be provided as identified by the monitoring process. Such help could be workshops dealing with understanding, perceiving and coping with changes, problem-solving techniques, new life skills, uses of information and leadership training.
	Around 25 traplines in the Cross Lake area will be permanently damaged (unless Bladder Rapids is developed). These lines are regularly used by approximately 50% of the Cross Lake trappers and produce 33 1/3% of the trapping income at Cross Lake.	Equivalent alternatives (e.g. trapline re-location) and/or compensation be provided to trappers for losses in income including income-in-kind. The Department of Mines, Resources and Environmental Management Fur Program be accelerated to help identify alternatives.

COMMUNITY	IMPACT OR RATIONALE	MITIGATION OR COMPENSATION OPTIONS
CROSS LAKE		Trappers' real property losses (cabins, traps, etc.) be replaced or equivalent cash payment made. A local training program be acelerated to provide opportunities for those residents who stopped trapping because of development related impacts, e.g., temporary employment.
	The community trapline is in the area to be affected. This line provides recreation to the community elders, a training ground for the young and a source of country food for the community.	Alternate community recreational facilities be provided to replace those of the community trapline.
	Changes in the water regime could change the fish migration patterns and decrease spawning areas of the Cross Lake fishery.	Compensation and/or equivalent alternatives (other lakes) be provided to fishermen for income losses including income-in-kind.
	The increase in water levels during the winter plus the "cutback" during freeze-up could create a very poor ice cover in Cross Lake. There is a small winter fishery in existence at Cross Lake.	Compensation be provided to fishermen for income losses resulting from possible disruption of the Cross Lake winter fishery due to poor ice conditions after regulation.

COMMUNITY	IMPACT OR RATIONALE	MITIGATION OR COMPENSATION OPTIONS
CROSS LAKE	Lower levels during summer as well as frequent fluctuations will made access and lake navigation on Cross Lake more difficult.	Fishermen's real property losses (boats, nets) resulting from excessively high or low water levels or fluctuations should be replaced or equivalent cash payment made.
	The construction of a control structure at the outlet of Cross Lake (at Bladder Rapids) would decrease the water level fluctuations and the degree of reversal of water levels.	The development of a control structure at Bladder Rapids be initiated in consultation with the community as soon as possible to alleviate the effects of the Jenpeg Control on Cross Lake.
	As a result of hydro construction at Jenpeg, an all-weather road now exists within 25 miles of the community at the mouth of the Minago River on Cross Lake.	A moveable or temporary fish holding station, docking facilities and a regular truck pick-up be set up at the mouth of the Minago River for shipping commercial fish to Wabowden. The station could be moved to Cross Lake when an all-weather road to the community is constructed.
	Lower water levels in summer could create transportation problems between Walker and Cross Lakes. This route would be heavily used by fishermen if the road to Jenpeg is used to transport fish.	The outlet of Walker Lake be monitored to determine the degree of disruption created by the new water regime. If necessary, channel improvements be built to ensure water access.

COMMUNITY	IMPACT OR RATIONALE	MITIGATION OR COMPENSATION OPTIONS
CROSS LAKE	Hunting in Cross Lake provides a substantial amount of income-in-kind and although the new water regime will not substantially effect wildlife populations, the influx of construction workers has substantially increased hunting pressure.	Existing game regulations continue to be strictly enforced in the outlet lakes area.
	Rapid decline in hydro employment after 1976 coupled with an increased local labour force in the next 5 years will create a chronic employment problem if no plans are made.	A comprehensive investigation be undertaken of the future job opportunities in forestry (e.g. Sipiwesk Lake area), community service industry and tourism.
	The resource base industries and service industry at Cross Lake is incapable of providing sufficient employment for the community.	The principle of mobility to find employment be basic in an employment strategy for Cross Lake. Manitoba Hydro and relevant Federal and Provincial agencies, in consultation with the community, build an all-weather road to link Cross Lake with the road at Jenpeg. This will facilitate mobility for employment. The Federal and Provincial government agencies, in consultation with the community, develop an employment strategy for Cross Lake.

COMMUNITY	IMPACT OR RATIONALE	MITIGATION OR COMPENSATION OPTIONS
CROSS LAKE	There are a number of structures located at or below the anticipated high water level.	Any buildings, docks or other structures which will be affected by higher water levels be replaced or relocated by Manitoba Hydro after consultation with local representatives.
	Poor ice conditions could cause serious disruption of the winter road freighting.	If the winter road is damaged, Manitoba Hydro provide an all-weather road to Cross Lake to ensure efficient transportation.

COMMUNITY	IMPACT OR RATIONALE	MITIGATION OR COMPENSATION OPTIONS
NELSON HOUSE	There will be a negative impact on furbearer populations and trapline access in the Nelson House area.	Manitoba Hydro initiate discussions with Nelson House community representatives regarding loss of income to trappers related to locating "new fur",cutting new trails, and decreasing furbearer populations.
	The Nelson House trappers are primarily the older men in the community who have neither the education, the language ability nor the inclination to enter the wage economy.	Emphasis be placed on mitigation (development) rather than compensation (cash payment) with a view to retaining the opportunity to trap for those who so desire.
	Wuskwatim Lake, one of the major lakes fished by Nelson House fishermen is located on the diversion route.	The opportunity to fish for a living be maintained by emphasizing mitigation rather than compensation (cash payment). Manitoba Hydro initiate discussions with Nelson House representatives regarding compensation for real property and income losses.
	For Nelson House to become economically viable, more wage employment is required since the growth potential of the traditional sector is limited.	Relevant government agencies, in consultation with Nelson House representatives, develop placement programs (e.g. Churchill and Lower Churchill Rivers Hydro Development, Inco Mine and other jobs).

COMMUNITY	IMPACT OR RATIONALE	MITIGATION OR COMPENSATION OPTIONS
NELSON HOUSE	The magnitude of changes as perceived by the community people at present are greatly exaggerated. This is probably a result of the inadequate, inaccurate, piece-meal information they have received. In order to participate meaningfully in decision-making regarding the hydro impacts, Nelson House residents must have sufficient knowledge of the effects.	At the discretion of and in consultation with the 7 community Northern Flood Committee and the Nelson House Hydro Committee, a two-way information-communication process be set up. One person be charged specifically with the responsibility of helping the majority of people in the community learn the relevant facts.
	As a result of the residents inadequate knowledge of the hydro development, a general feeling of mistrust and maltreatment has developed in the community. This attitude does not facilitate co-operation between Hydro and the community in discussing mitigation options.	At the discretion of the Northern Flood Committee and the Nelson House Flood Committee, a local person from Nelson House be hired to assist the agency person as recommended above.
	The majority of people obtain information about events via "word of mouth" and radio. Very few people obtain information from written material.	To facilitate the dissemination of information an interest or awareness be created by means of a Native Communications Information radio station and the Thompson radio station. Following this, a community workshop be organized to pass on information to the community. To reduce mistrust and assist information

COMMUNITY	IMPACT OR RATIONALE	MITIGATION OR COMPENSATION OPTIONS
NELSON HOUSE		dissemination, all information resulting from the study process be made available. Tentative information should be labelled as such but not withheld.
	Nelson House community decision-making centres around a great deal of public involvement and is necessarily a somewhat slower process than in some communities.	All agency people working with Nelson House recognize and respect that the Nelson House decision-making process is a time consuming one.
	Although the community has advanced considerably in its own viability and autonomy, it is not certain that it is capable of coping with the impending social change which is anticipated as a result of present rate of northern development.	A program of monitoring non-physical changes in Nelson House be established. Appropriate social intervention help be provided. Such help could be workshops for understanding, perceiving and coping with changes, problem-solving techniques, use of information and leadership training.
	There will be substantial real property damage as a result of the Churchill River Diversion.	In consultation with community representatives, compensation, replacement, mitigation (e.g., Footprint River Dam), and/or relocation of affected structures and transportation facilities in Nelson House be undertaken by Manitoba Hydro as soon as possible.

COMMUNITY	IMPACT OR RATIONALE	MITIGATION OR COMPENSATION OPTIONS
SOUTH INDIAN LAKE	The increase in water levels and flows as well as increased debris on the lake could severely decrease fish productivity and hamper South Indian Lake fishing operations. In 1972 fishing provided 43% of the community income.	A planning process be initiated in consultation with the community and all relevant agencies to ensure that a viable fishery exists at South Indian Lake following the Churchill River Diversion. Compensation and/or equivalent alternatives (e.g. other lakes) be provided to individual fishermen for income losses including income-in-kind. Fishermen's real property damage (e.g. boats, nets, etc.) be replaced or equivalent cash payment made.
	About 50 moose per year are consumed by the people at South Indian Lake. Moose populations could decline due to loss of habitat along shorelines but most likely due to increased hunting pressure from Leaf Rapids and the South Bay construction site.	Game laws be strictly enforced and if necessary non-community moose hunting be prohibited.
	Hydro is planning an on-going clearing program along part of the lake.	The residents of the community be consulted as to which areas should be cleared. Timber from the clearing projects be made available to the community for fuel.

COMMUNITY	IMPACT OR RATIONALE	MITIGATION OR COMPENSATION OPTIONS
SOUTH INDIAN LAKE	Since 1972 a large number (exact figures unavailable) of South Indian Lake residents have been employed in hydro construction or timber clearing operations. There is little evidence that they are acquiring transferable skills while on these jobs. Most of these jobs terminate by mid 1975. The level of community services has increased steadily during the past 5-10 years. Operation and maintenance of these services could employ an increasing number of local people. Trapping could continue to provide a subsistence level of income to a few residents. The fishery could provide employment but its operation depends on rationalization, management competence and local initiative.	Job opportunities in areas of mining, construction and community services be investigated in detail and action taken to ensure local participation. In consultation with the community, relevant Federal and Provincial government agencies develop an employment strategy for South Indian Lake.
	There are 20 homes plus other structures (docks, etc.) which will be rebuilt by Hydro because they will be affected by the rise in water levels. There are 30-50 other homes that may require replacement or relocation at a later time.	That current consultation and negotiation with the community concerning replacement and/or relocation of homes and other structures be continued.

COMMUNITY	IMPACT OR RATIONALE	MITIGATION OR COMPENSATION OPTIONS
SOUTH INDIAN LAKE	Changes in water levels and flows will severely inhibit safe winter transportation across the Narrows. At present, the community is located partially on both sides of the Narrows.	That, in consultation with the community, internal transportation facilities be provided to replace the loss of ice travel before the winter of 1975/76. An intensive information program concerning safety hazards for ice and water levels (particularly in the vicinity of the community) be instituted immediately. A constant monitoring and updating program be established to ensure that current ice and water level information is available to the community at all times. The option to relocate houses on the east side of the Narrows be made available.
	Increased debris on the lake could present a hazard to navigation and cause damage to boats and motors.	That compensation for and/or replacement of real property losses due to debris be made available.
	As a result of the recent acceleration of development in northern Manitoba, the community is facing more problems. As well as having to make more decisions, the decisions have become more complex (involve external factors) and the time available to accomplish them has decreased.	The process of leadership and community life skills training, which has been initiated, be continued.

COMMUNITY	IMPACT OR RATIONALE	MITIGATION OR COMPENSATION OPTIONS
NORWAY HOUSE	Although damage to Norway House trapline block will not be severe, certain traplines will be affected.	Trappers real property losses (cabins, traps, etc.,) be replaced or equivalent cash payment made. Equivalent alternatives and/or compensation be provided to trappers for income losses including income-in-kind.
	The exact impact on wildlife is not known at this time.	A post development monitoring program be undertaken to determine the exact impact on wildlife. Until the impacts are conclusively known, interim compensation payments be made to trappers. A monitoring period of 3-5 years is suggested.
	It is fairly certain the Norway House community trapline, which is largely of recreational value, will be affected.	Recreational facilities of some kind be provided as an alternative to that of the community trapline. Compensation be negotiated with the full participation of community representatives.
	The expected water regime changes and debris on Playgreen Lake could present a hazard to navigation and fishing operations.	Fishermen's real property losses (nets, boats, etc.,) be replaced or equivalent cash payment made.

COMMUNITY	IMPACT OR RATIONALE	MITIGATION OR COMPENSATION OPTIONS
NORWAY HOUSE	Although the disruption of the fishery due to increased sediment lading and possible changes in fish migration patterns is expected to be short term, the exact impact is not known at this time.	A post development monitoring program be undertaken to determine the exact impact on the fishery. Final compensation arrangements be post-poned until the impacts are known conclusively. Interim compensation payments be made to fishermen during the monitoring phase.
	The Flett (Sandy) Island fish packing station belonging to Norway House Fishermen's Co-operative, will be subject to higher water levels after regulation of Lake Winnipeg.	The Flett (Sandy) Island fish packing station be relocated and the new site be chosen in consultation with the Norway House Fishermen's Co-operative.
	The winter road (the only land access to Norway House) could be unstable in two locations as a result of a change in water regime after regulation.	A post development monitoring program be undertaken to determine the effects on the Norway House winter road. If necessary, the road be relocated.
	Although hydro development construction provided abundant job opportunities during 1973 and 1974, employment of Norway House residents was low.	Federal and/or Provincial governments undertake an examination of employment opportunities at Norway House with a view to maximizing the opportunities available.
	Although the social system of the community as a whole will not be affected, certain individuals with special interests (eg. fishing) will suffer some anxiety if not fully aware of the resource impacts.	A concerted effort be made to keep this community abreast of the anticipated impacts on the resource base of their community.

COMMUNITY	IMPACT OR RATIONALE	MITIGATION OR COMPENSATION OPTIONS
SPLIT LAKE AND YORK LANDING	The impact of the Lake Winnipeg Regulation, Churchill and Nelson Rivers Diversion project on Split Lake and York Landing will be minor. However, the Upper Gull site, if developed, could have more severe impacts on these communities.	A comprehensive impact assessment of the development of the Upper Gull site be undertaken prior to development, and in consultation with the communities.
	Although the effects on Split Lake are expected to be minor, increased turbidity and somewhat unnatural water level fluctuations could effect fish productivity.	If there is a decline in fish productivity, an equivalent alternative (eg. another lake (s) and/or compensation be provided for loss in income including income-in-kind.
	Debris from upstream on the Burntwood River could enter Split Lake, presenting a hazard to fishing operations.	Fishermen's real property losses (nets, boats, etc.) resulting from debris be replaced or equivalent cash payment made. A timber boom be installed near the mouth of the Burntwood River to prevent upstream debris from entering Split Lake.
	Although furbearers around Split Lake will not be significantly affected, shoreline access to traplines could be disrupted for a short time and Split Lake Section traplines bordering the Lower Churchill could be affected.	Equivalent alternatives and/or compensation be provided to trappers for income losses including income-in-kind. Trappers real property losses (cabins, traps, etc.) be replaced or equivalent cash payment made.

COMMUNITY	IMPACT OR RATIONALE	MITIGATION OR COMPENSATION OPTIONS
SPLIT LAKE AND YORK LANDING	Debris from upstream on the Burntwood River could enter Split Lake presenting a hazard to navigation. Increased flows during the winter could hamper the safety of the winter road. (The probability of this occurring is remote).	The Provincial government undertake a transportation safety monitoring program on Split Lake, prior to the water regime changes.
	Split Lake and York Landing have a very high unemployment rate.	Federal and/or Provincial government (s) undertake a training and job placement program at Split Lake and York Landing to enable full utilization of the future employment opportunities provided by Lower Nelson Hydro construction and the Gillam-Thompson road construction.
	Although the social systems of the communities as a whole will not be affected, certain individuals with special interest (eg. fishing) will suffer some anxiety if not fully aware of the resource impacts.	A concerted effort be made to keep these communities up-to-date of the anticipated impacts on the resource base of their communities.

COMMUNITY	IMPACT OR RATIONALE	MITIGATION OR COMPENSATION OPTIONS
CHURCHILL	The Churchill River is the predominant recreation area for Churchill residents for canoeing, cottaging, fishing, hunting, etc. Reduced flows along the Churchill River will severely inhibit this recreation.	A weir be constructed on the Churchill River at Mosquito Point to maintain higher levels. If a weir is not constructed at Mosquito Point, compensation be provided in some form to local residents.
	The reduced flows along the Lower Churchill will probably cause salt water intrusion or ice damage to the Churchill water supply.	A reservoir be constructed to make water available for use during low flow periods, or a rock filled weir be constructed downstream of the intake to prevent salt water intrusion and ice damage, or the intake be relocated upstream or, Manitoba Hydro's operating licence be revised to allow flows of 10,000 - 20,000 cfs. This flow is considered adequate to prevent salt water intrustion and ice damage.
	The future water regime along the Lower Churchill and its resulting impacts are extremely difficult to predict.	An on-going management mechanism (similar to the Lake Winnipeg Regulation Board) be established to ensure suitable government policy and to ensure control of hydro operations in this area.

COMMUNITY	IMPACT OR RATIONALE	MITIGATION OR COMPENSATION OPTIONS
ILFORD	The Ilford fishery located on Northern Indian, Fidler and Billard Lakes will no longer be viable due to the drastic reduction in flows along the Lower Churchill. The loss to the Ilford fishery will be approx. $20,000 annually (wages, income and property damage inclusive). This loss will severely inhibit the viability of the Ilford Co-operatives Limited.	A series of weirs be built at the outlets of the four Lower Churchill lakes to maintain natural lake levels, or a control structure be built at the outlet of Northern Indian Lake which would act as a storage reservoir and ensure minimum natural flows. If the above structures are not built then, equivalent alternatives (relocation to a new lake) and/or compensation be provided to Ilford Co-operative fishermen for losses in income.
	The Ilford Co-op has a substantial investment in lakeside facilities on the Lower Churchill River lakes.	Real property losses by Ilford Co-operative and Ilford fishermen be replaced or equivalent cash payment made. Information concerning these impacts be communicated to the Ilford Co-operative Limited and to individual fishermen, to enable their participation in negotiating compensation alternatives.
	Although the community social system will not be affected, certain individuals with special interests (eg. fishing) will suffer some anxiety if not fully aware of the resource impacts.	A concerted effort be made to keep this community abreast of the anticipated impacts on the resource base of their community

COMMUNITY	IMPACT OR RATIONALE	MITIGATION OR COMPENSATION OPTIONS
THOMPSON	The Thompson float plane base located on the Burntwood River could be severely endangered by excess debris and heavy bank erosion.	Manitoba Hydro undertake timber clearing and timber booming to reduce debris in the vicinity of the float plane base. A monitoring program be set up to ensure safe conditions for aircraft. If safety hazards cannot be overcome, the float plane base be relocated.
	The higher levels on the Burntwood River may cause periodic stoppage of the water intake systems. This will probably cause periodic shut-downs of the Inco Plant, as well as the Town's emergency services.	The Thompson and Birchtree Mine intake systems be redesigned and reconstructed to mitigate this impact.
	Thompson residents use the Burntwood River extensively for summer and winter recreation. Following diversion, debris will severely inhibit angling and water skiing. A Provincial Park will be partially flooded and/or eroded and ice conditions will be hazardous.	Alternate recreational facilities be provided for Thompson residents perhaps by developing the Partridge Crop Lake area.

COMMUNITY	IMPACT OR RATIONALE	MITIGATION OR COMPENSATION OPTIONS
LEAF RAPIDS	Shoreline instability along the Churchill River near Leaf Rapids will cause some loss in local recreational areas.	The Provincial government examine the feasibility of development of a provincial park at Hughes Lake and the construction of a road into the Granville Lake area to provide additional recreational areas.
	The operation of a cement mixing plant at Leaf Rapids could be hampered by the change in water levels along the Churchill River.	The relevant persons be informed of this possibility.

COMMUNITY	IMPACT OR RATIONALE	MITIGATION OR COMPENSATION OPTIONS
LAKE WINNIPEG COMMUNITIES	The fishery and recreational resources of Lake Winnipeg area could be improved as a result of the greater stability of lake levels following regulation. In turn, this would result in an overall enhancement of the transportation facilities and service industries.	A Lake Winnipeg Management Board be formally established to oversee future development and management of the fishery, recreation, transportation and service industry resources.

CHAPTER II

INTRODUCTION

INTRODUCTION

A. BACKGROUND

Manitoba Hydro is proceeding with a development plan to direct flow from the Churchill River into the Nelson River and to regulate Lake Winnipeg. In 1971 Canada, (Environment Canada) and Manitoba, (Department of Mines, Resources and Environmental Management) signed a joint study agreement to assess the impact of these developments. This agreement established the Lake Winnipeg, Churchill and Nelson Rivers Study Board and called for a number of studies related to engineering, resources, environmental and social-economic aspects of the developments. The present report represents the social and economic components of these studies.

B. STUDY OBJECTIVES

The agreement states the objectives of the social and economic study as being:

"1. Project Impact - as required to assess the local impact in social and economic terms of the works, including the effects on employment, wage rates, transient population, trade, accessibility, mobility and communications, to consider and propose means of ameliorating any undesirable effects on the people of the communities in the area.

2. Potential Opportunities - as required to determine means by which the people of the region can, in both the short and long term, obtain the greatest advantage from the social and economic opportunities resulting from construction of the works and associated developments." [1]

C. STUDY AREA

The area of concern for this study stretches from the southern end of Lake Winnipeg north to the outlet lakes area, then northwest along the Rat-Burntwood River systems to Southern Indian Lake and hence down the Lower Churchill River to Hudson's Bay. In addition, some consideration has been given to the hydro developments planned for the Lower Nelson River (see Figure 2, p. 37). The nature of this social and economic study made it impossible for the analysis to be limited to areas within these boundaries. Some issues necessitated the broadening of the analysis to include all of northern Manitoba. However, in these cases, the area under consideration is made explicit.

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[1] Canada-Manitoba study agreement for Lake Winnipeg and the Churchill and Nelson Rivers, August 24, 1971.

D. PROJECT DESCRIPTION

1. THE LAKE WINNIPEG REGULATION PROJECT

In order to generate additional hydroelectric power, Manitoba Hydro has been issued a licence to regulate Lake Winnipeg within a range of 711 feet ASL (above sea level) and 715 feet ASL. Under the terms of the licence three channels, the Kiskitto Dam and diversion structure and the Jenpeg control structure and power generating facility, are being constructed. The Jenpeg control structure with an average forebay level of 715 feet ASL, is licenced to allow a minimum flow of 25,000

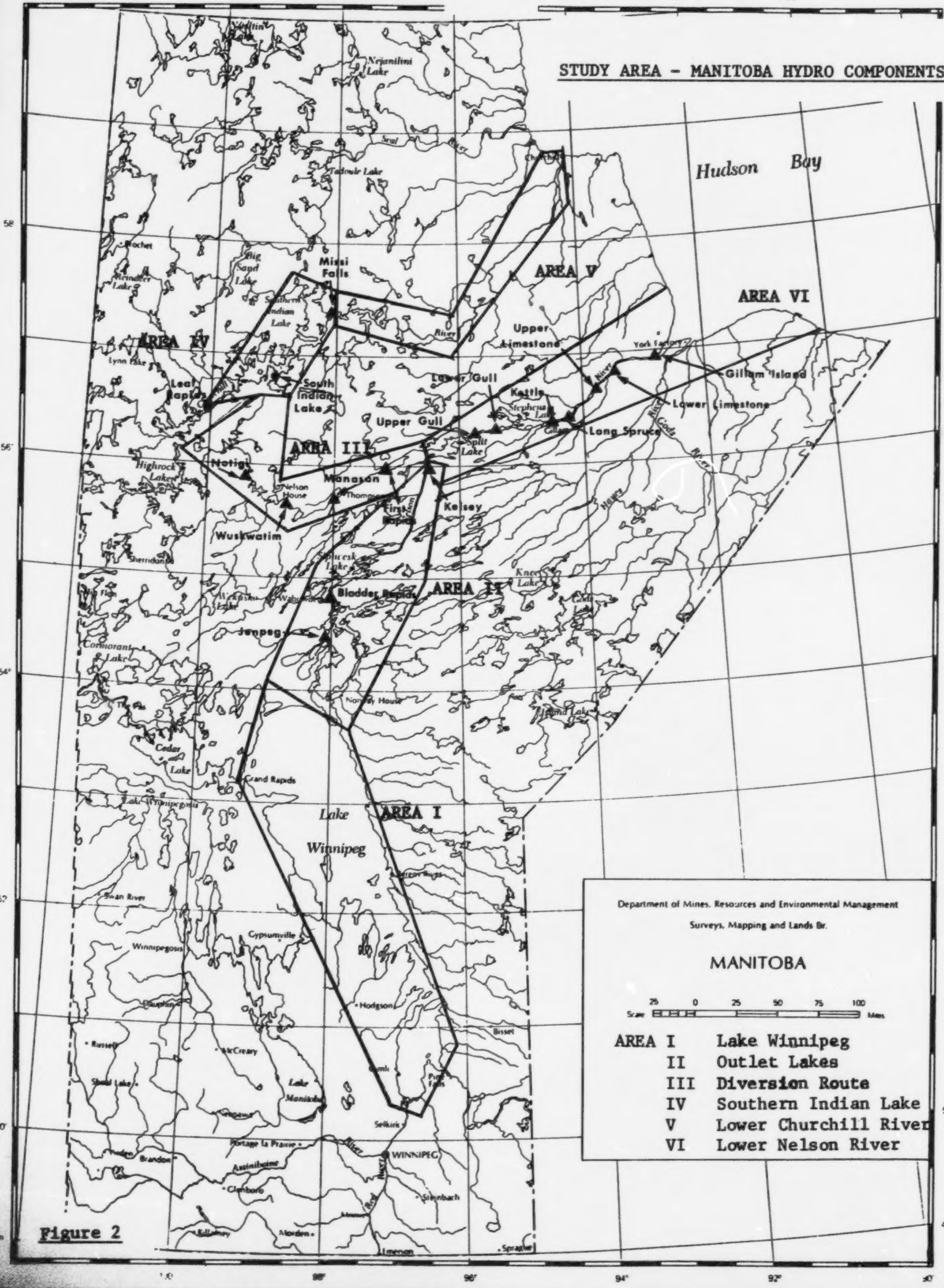

STUDY AREA - MANITOBA HYDRO COMPONENTS
Hudson Bay
AREA I
AREA II
AREA III
AREA IV
AREA V
AREA VI
Missi Falls
Southern Indian Lake
South Indian Lake
Leaf Rapids
Notigi
Wuskwatim
Manasan
Thompson
First Rapids
Kelsey
Upper Gull
Lower Gull
Kettle
Long Spruce
Upper Limestone
Lower Limestone
Gillam Island
York Factory
Split Lake
Stephens Lake
Bladder Rapids
Jenpeg
Norway House
Grand Rapids
Lake Winnipeg
Lake Winnipegosis
Cedar Lake
Cormorant Lake
Lake Manitoba
Churchill
Nejanilini Lake
Tadoule Lake
Big Sand Lake
Lynn Lake
Highrock Lake
Nelson House
Sipiwesk Lake
Knee Lake
Island Lake
Gypsumville
Hodgson
Selkirk
WINNIPEG
Brandon
Portage la Prairie
Dauphin
Swan River
Russell
Steinbach
Bisset
Sprague
Department of Mines, Resources and Environmental Management
Surveys, Mapping and Lands Br.
MANITOBA
Scale
Miles
25
0
25
50
75
100
AREA I Lake Winnipeg
II Outlet Lakes
III Diversion Route
IV Southern Indian Lake
V Lower Churchill River
VI Lower Nelson River
58°
56°
54°
52°
50°
49°
102°
100°
98°
96°
94°
92°
90°

Figure 2

cfs (cubic feet per second) with maximum daily fluctuations in flows not to exceed 15,000 cfs. Figure 3 illustrates the most significant components of the project.

(a) Two Mile Channel

This channel will provide a connection between Lake Winnipeg and Playgreen Lake west of Warren's Landing. The channel will be an average of 410 feet wide with a minimum depth of 25 feet and will accommodate a median flow of approximately 2.0 fps. (feet per second). The main purpose of the channel is to increase winter flows into Playgreen Lake from Lake Winnipeg to enable more power production further down the Nelson River.

(b) Eight Mile Channel

This channel will connect Kiskittogisu Lake and Playgreen Lake via the Kiskittogisu River and a man-made channel. The channel will be approximately 1,000 feet wide at the Playgreen Lake end and narrow to 425 feet at the Kiskittogisu Lake end. The depth will be about 25 feet throughout. The median flow through

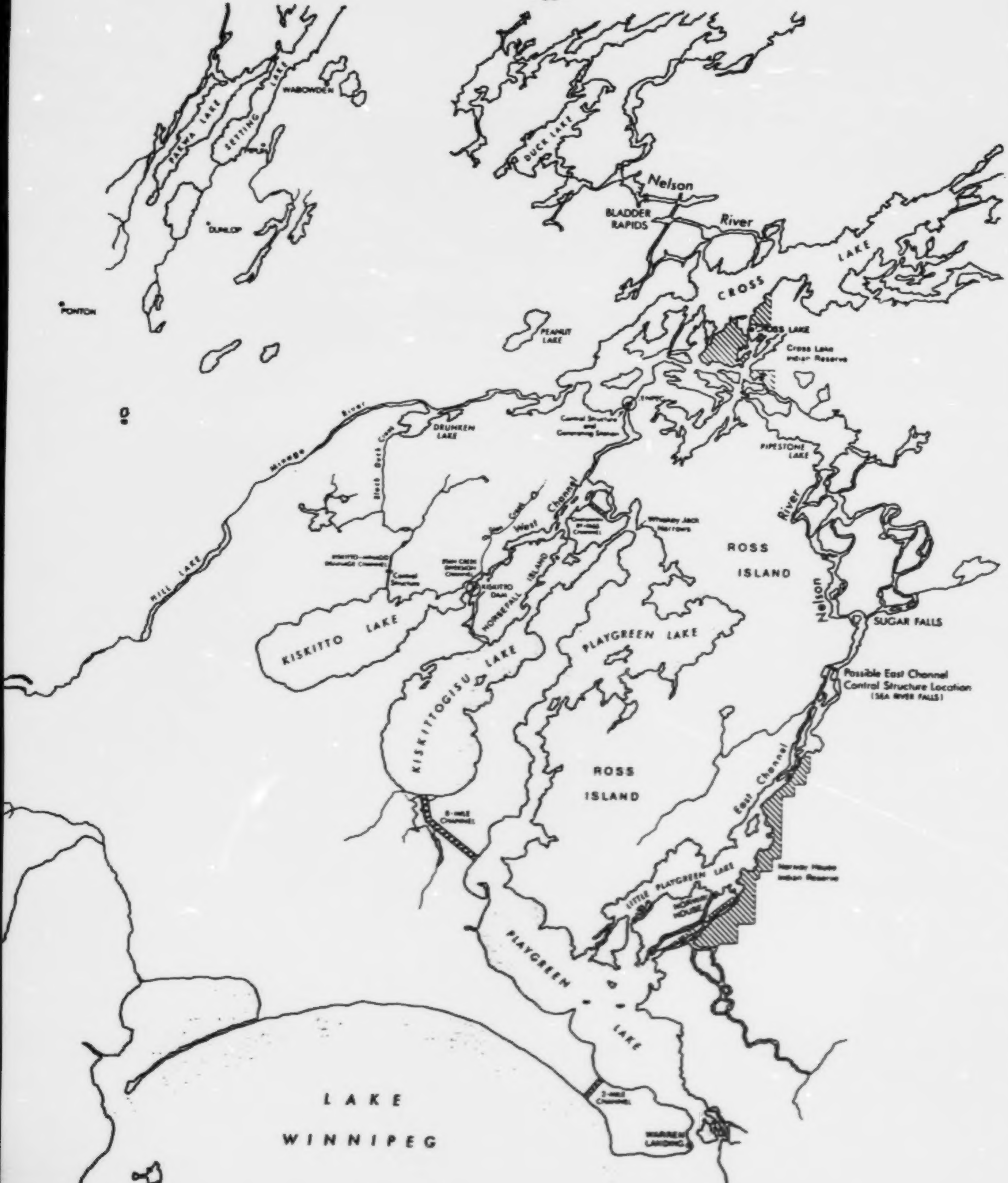

PAKWA LAKE
SETTING LAKE
WABOWDEN
DUNLOP
PONTON
DUCK LAKE
Nelson
River
BLADDER RAPIDS
CROSS
LAKE
CROSS LAKE
Cross Lake Indian Reserve
PEANUT LAKE
DRUNKEN LAKE
Control Structure and Generating Station
Minago
River
Black Duck Creek
MILL LAKE
Control Structure
West
Channel
Whiskey Jack Narrows
KISKITTO Dam
HORSEFALL ISLAND
KISKITTO LAKE
KISKITTOGISU LAKE
PLAYGREEN LAKE
ROSS ISLAND
ROSS ISLAND
PIPESTONE LAKE
River
Nelson
SUGAR FALLS
Possible East Channel Control Structure Location
(SEA RIVER FALLS)
East Channel
Norway House Indian Reserve
LITTLE PLAYGREEN LAKE
NORWAY HOUSE
8-MILE Channel
PLAYGREEN LAKE
2-MILE Channel
WARREN LANDING
LAKE WINNIPEG

Figure 3 THE OUTLET LAKES

this channel is expected to be 2.0 fps. Again, the main purpose of the channel is to increase winter flows to the Nelson River to enable power production.

(c) The Ominawin Bypass Channel

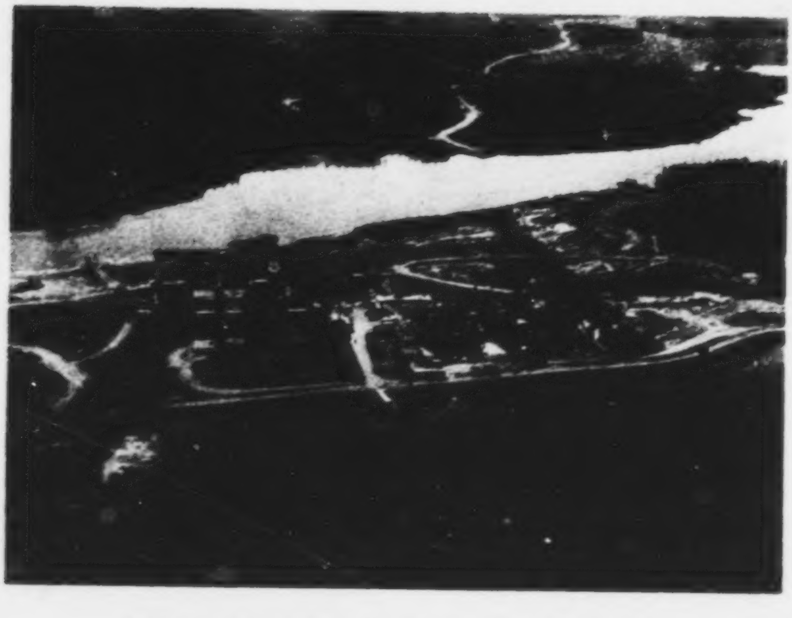
This channel will divert flows around the Ominawin Rapids to the West Channel of the Nelson River. It will be approximately 1,500 feet wide and 25 feet deep with a median flow of 2.0 fps. Again, the purpose of this channel is to facilitate flow down the Nelson River.

Work on the Eight Mile Channel and the Ominawin Bypass is underway and they are scheduled for completion in November 1974. The Two Mile Channel may not be completed until November 1975.

(d) Kiskitto Lake Regulation

A number of smaller dams and dykes are being constructed in order to provide more hydraulic control and to restrict flooding within this area. Kiskitto Lake will be controlled by a dam at the outlet to the West Channel and a channel and control structure from

Timber clearing in vicinity of Jenpeg Forebay



Jenpeg Control Structure and Generating Station under construction

Looking Southeast - 8 Mile Channel with dredge operating

Ominawin Bypass Channel under construction

Lake Kiskitto to Black Duck Creek. A controlled inflow structure will be provided near the Kiskitto Dam. These structures will result in a decrease in the range of fluctuations in levels on the lake and enable levels to be managed for waterfowl production. The work is scheduled for completion in June 1974.

(e) Jenpeg Control Structure and Generation Station

This structure is located at the outlet of the West Channel of the Nelson River into Cross Lake. Its primary purpose is to control water levels and flows from Lake Winnipeg to facilitate power generation on the Lower Nelson River. A secondary function is to generate power at Jenpeg itself. Work on this facility has been underway since 1972. The control structure is scheduled to go into operation in November 1974 while the generating station will be operable by July 1976 and completed in May 1977. The Jenpeg structure will provide a permanent bridgehead across the West Channel, and has resulted in the construction of an all weather road from Provincial Road #373 to Jenpeg. This caused immediate changes in transportation patterns in the area which can be expected to continue into the future.

(f) East Channel Control Structure

If built, this structure would control water levels and flows on the East Channel of the Nelson River. The most likely location for the structure is Sea River Falls (approximately 8 miles downstream from Norway House). The purpose of the structure would be to control flows down the East Channel to allow for increased power production at the Jenpeg generating station. However, information to date indicates that construction is doubtful as the increased power production does not appear to justify the cost. It should be noted that, if built, the structure would provide a bridgehead across the East Channel and probably result in an all-weather road to Norway House. Further, this structure could have disruptive effects on the recreational potential of this area, particularly canoeing activities.

2. THE CHURCHILL RIVER DIVERSION PROJECT

In order to generate additional hydroelectric power, Manitoba Hydro has been issued a licence to divert not more than 30,000 cubic feet per second of water from the Churchill River at Southern Indian Lake into the Nelson River via the Rat-Burntwood Rivers system.

Under the terms of the licence, a minimum of 500 cfs during open water and 1,500 cfs during the ice cover period must be released down the Lower Churchill River from a control structure being developed at Missi Falls. Southern Indian Lake will be raised to elevation 847 feet ASL with a maximum permissable level of 850 feet ASL. Once Southern Indian Lake is being utilized as a reservoir, the maximum drawdown or fluctuation permitted in any 12-month period will be 2 feet.

The diverted water will flow into the Rat-Burntwood River system via an excavated channel connecting Southern Indian Lake to Issett Lake. From its origin at Issett Lake, the Rat River flows south through Karasakuwigamak, Pemichigamau, Rat, Notigi, and Wapisu Lakes, into Threepoint Lake where it joins the Burntwood River. From Threepoint Lake, the water flows northeasterly along the Burntwood River to the Nelson River.

Figure 4 illustrates the diversion route and identifies the most significant components of the project.

(a) Missi Falls Control Structure

This structure will control the outflow from Southern Indian Lake and is being built at Missi Falls at the extreme eastern end of Southern Indian Lake. With the completion of the control structure, scheduled for June, 1975, Manitoba Hydro propose to close the gates and raise the level of Southern Indian Lake to a maximum elevation of 847 feet ASL (historic maximum elevation has been computed to be 842.81 feet ASL).

(b) South Bay Diversion Channel

South Bay is a body of water on the southeast corner of Southern Indian Lake. The diversion channel will connect South Bay to Issett Lake and will have a discharge capacity of 30,000 cfs.

DIVERSION ROUTE

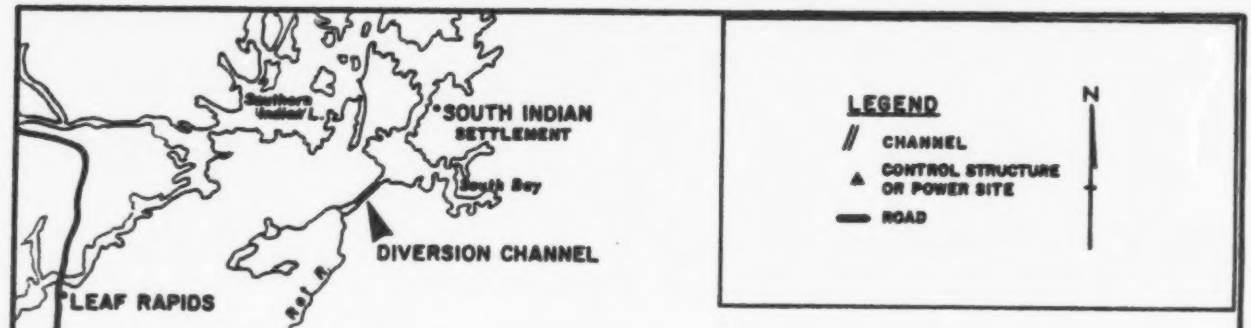

Southern Indian L.
SOUTH INDIAN SETTLEMENT
South Bay
DIVERSION CHANNEL
LEAF RAPIDS
Rat R.
LEGEND
CHANNEL
CONTROL STRUCTURE OR POWER SITE
ROAD
N
Split L.
FIRST RAPIDS POWER SITE
Notigi L.
Prov. Road 391
Burntwood R.
Nelson R.
NOTIGI CONTROL STRUCTURE & FUTURE POWER SITE
Wapisu L.
NELSON HOUSE
Threepoint L.
MANASAN POWER SITE
THOMPSON
Wuskwatim L.
Burntwood R.
WUSKWATIM POWER SITE
APPROXIMATE SCALE : 1 INCH = 20 MILES

Figure 4

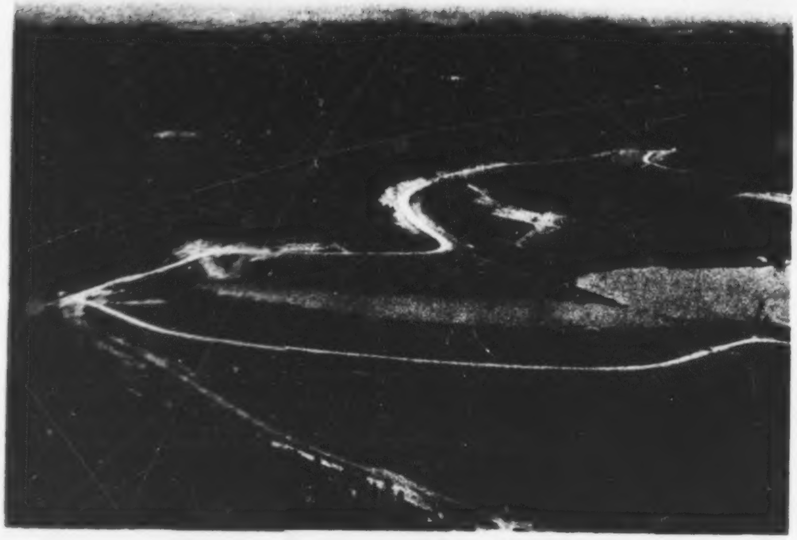
(c) Notigi Control Structure

The cofferdam below Notigi Lake, northwest of Nelson House, was completed in May, 1974, prior to scheduled dates for both the Missi structure and the South Bay Channel. The flow of the Rat River, approximately 1,200 cfs, has been closed off at Notigi to allow the levels in the Rat-Notigi reservoir to approach the level in Southern Indian Lake, approximately 840 feet ASL. In November, 1975, the gates of the Notigi structure will be opened to allow the water, augmented by approximately 30,000 cfs from Southern Indian Lake, to flow through Wapisu and Threepoint Lakes into the Burntwood River.

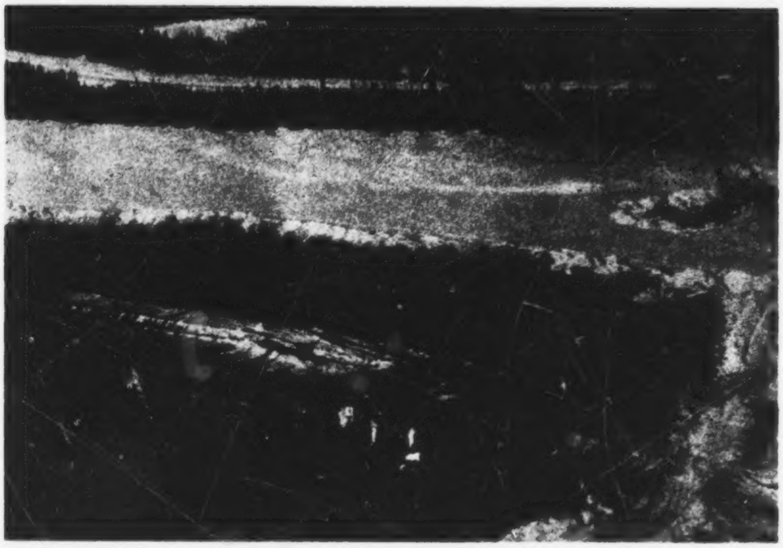
(d) Burntwood River Development

There are plans for the development of hydroelectric potential along the Burntwood River. Sites have been proposed at the outlet of Wuskwatim Lake, at Manasan Falls and at First Rapids, and are tentatively scheduled for development in the mid - 1980's.

Manitoba Hydro construction camp at Notigi

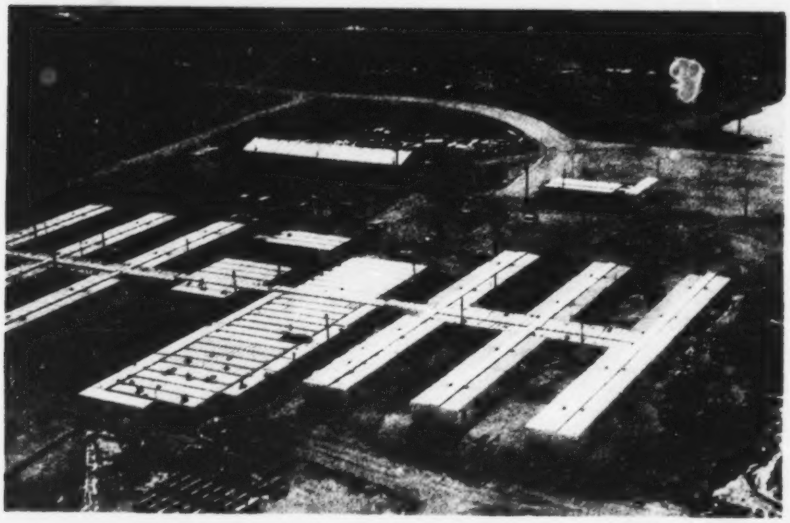


Cofferdam at the Notigi construction site



South Bay Channel under excavation

Slashed timber near Issett Lake -
at the southern end of the South Bay Channel



Manitoba Hydro construction camp at Missi Falls

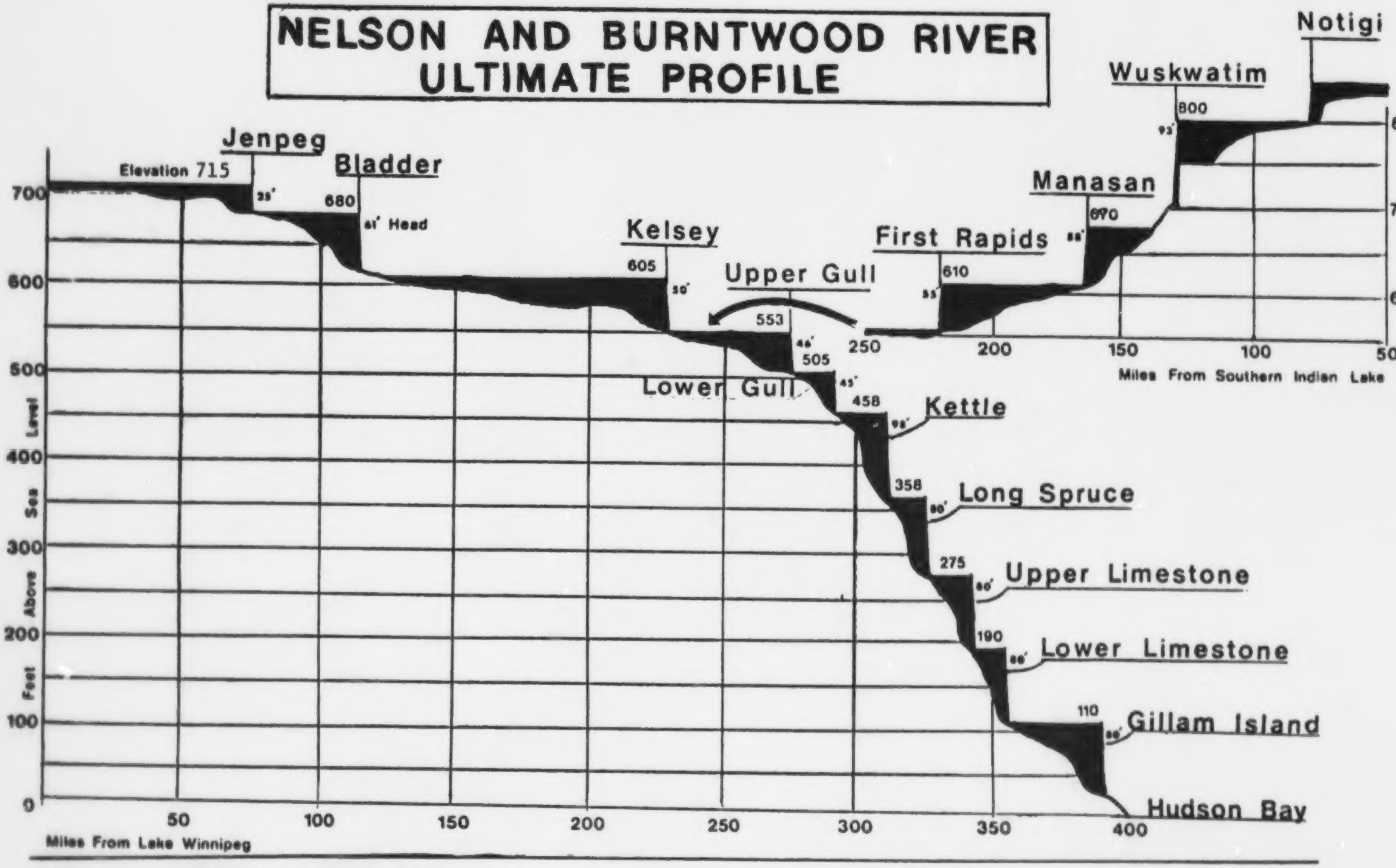
Missi Falls before development

(e) Footprint River Dam

In order to prevent a backup of the water from Threepoint Lake into Footprint Lake (Nelson House is located on the shores of this lake), there is consideration being given to constructing a dam between the two lakes. The dam would isolate Footprint Lake from the effect of the increased levels on Threepoint Lake. However, the flow from the Footprint River Basin, which averages 300-400 cfs., would have to be pumped over the dam into Threepoint Lake.

3. THE LOWER NELSON RIVER DEVELOPMENT

Hydroelectric development of the Lower Nelson River is planned to continue for the next twenty years. To date, two power sites have been developed, Kelsey and Kettle Rapids, and one is in progress, Long Spruce. Long Spruce is scheduled for completion in 1980. In addition, six future sites have been proposed. The Upper and Lower Limestone and Gillam Island sites may be developed by 1986. Following this, the Upper and Lower Gull sites are tentatively scheduled for the late 1980's. Bladder Rapids may be developed around 1990. Figure 5 illustrates the complete development of the Lower Nelson River,



NELSON AND BURNTWOOD RIVER
ULTIMATE PROFILE

Figure 5 Source: Manitoba Hydro

Forebay of the Kettle Rapids Development

Kettle Rapids Development spillway

Construction work - Long Spruce Development

Construction of the Generating Station at Long Spruce

Lake Winnipeg Regulation and Churchill River Diversion projects. Details concerning these future developments are not available at this point in time.

E. ACTION ORIENTED RESEARCH

This study has been conducted in conjunction with the development of the Lake Winnipeg Regulation and the Churchill River Diversion projects. As a result, in order to ensure the timely utilization of study conclusions and findings, a more action-oriented approach than is usually associated with studies of this nature, has been taken.

There is significant advantage in adopting such an approach, in that early action can be taken on crucial issues. This is particularly true when the research stage roughly coincides with actual construction, as in the present case.

The advantages associated with an action-oriented approach can be maximized only if two criteria are met:

1) an effective means of disseminating accurate information to appropriate groups or agencies must be devised, and

2) responsibility for taking action on vital issues must be assigned.

There are organizational problems involved in meeting both criteria. Therefore, before adopting the action-oriented approach, it is advisable to give careful consideration to solving the organizational problems involved in both disseminating information and delegating responsibility.

In this study, the commitment to action-oriented research resulted in the formation of several action committees, for example:

1. Timber Clearing Committee
   Submits guidelines for timber clearing to the Minister of Mines, Resources and Environmental Management, who, in turn, directs Hydro to clear and salvage timber in accordance with the conditions of Hydro's licence regarding manipulation of water flows.

2. Advisory Committee to Cabinet Committee on Churchill-Nelson Hydro Development
   Representation from Manitoba Hydro, Department of Mines, Resources and Environmental Management, Department of Northern Affairs, and the Social and Economic Impact

Study Group, established:

a) to advise Cabinet Committee on co-ordination, policy and program considerations, with particular emphasis on adjustment and development needs,

b) to expedite Cabinet Committee decisions, and

c) to carry out such other duties as may be assigned by the Cabinet Committee.

3. Study Auditors Committee

Representation from two provincial Departments (Department of Mines, Resources and Environmental Management and the Department of Northern Affairs), as well as the Federal Department of Indian Affairs and Northern Development.

4. Compensation Committee

Established to make decisions regarding compensation.

5. Observer Committee

Set up to act as advisors to the Compensation Committee.

In accordance with the principle of action-oriented research, these committees were provided with background material and findings as they became available.

In addition, several measures were adopted in an effort to co-ordinate the dissemination of information. In some cases, these were aimed at facilitating the two-way flow of information between the communities and the government (including the developer); in others, they provided a mechanism for information sharing among the various government agencies involved.

CHAPTER III

FRAMEWORK AND STUDY APPROACH

FRAMEWORK AND STUDY APPROACH

A. THE STUDY OBJECTIVE

In recent years, northern communities have been undergoing a steady transition from traditional or gathering societies to wage economies. The changing social and economic environment imposes a severe strain on local residents who can no longer rely on traditional methods for satisfying their individual and collective needs. The problem is even more acute if the rate of change exceeds the capacity of the community to adjust. Within this context, hydro development plays an important role since it will accelerate the rate of change facing communities within the study area. Thus, the emphasis in this study is on the social and economic impact of rapid change on communities which will be affected by hydro development.

A study of the dynamics of social change indicates that any change in the life of a community will produce stress because of the necessity for residents to adjust to new and unfamiliar circumstances. To the extent that they are able to cope with situations as they arise, stress is reduced and further progress facilitated. However, if residents are unable to make satisfactory adjustments, the community can no longer function effectively.

These relationships are illustrated in Figure 6, p. 62. A major function of society in such situations is to minimize stress and, at the same time, maximize the advantages that modernization can offer.

From this point of view, the objective of the study is:

1. to predict the changes which are likely to be either imposed or accelerated as a result of hydro development, and
2. to recommend ways in which appropriate community adjustments may be facilitated.

B. THE NORTHERN PROBLEM

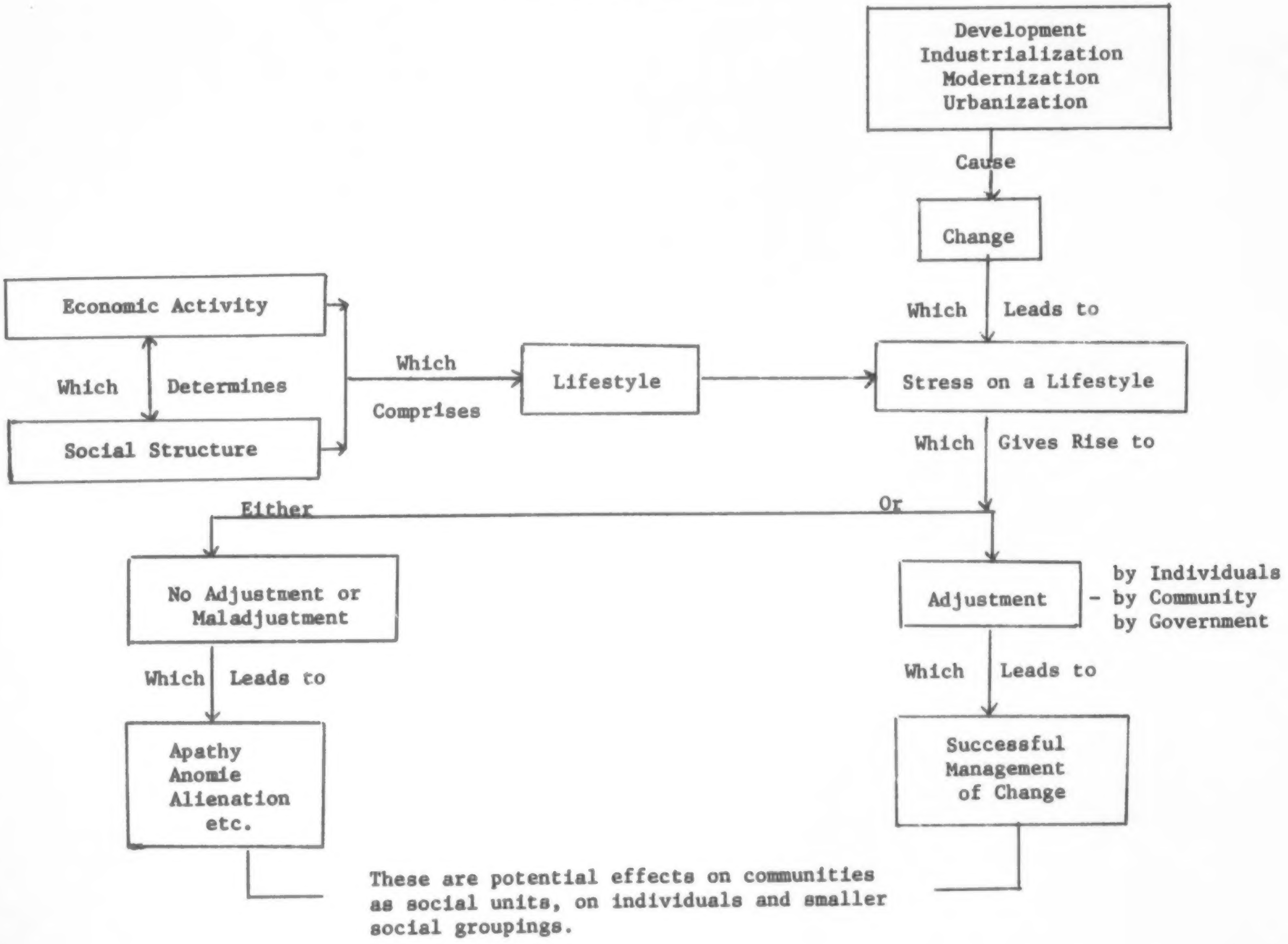
In order to assess the impact of hydro development on communities within the study area, it is useful to have some understanding of the problems associated with northern development.

1. TYPES OF NORTHERN COMMUNITIES

Two distinct types of communities exist in the North. One type is based on the immediate requirements of a single resource industry (Thompson, Flin Flon, Lynn Lake, The Pas), while the other

Figure 6

THE DYNAMICS OF CHANGE


Development
Industrialization
Modernization
Urbanization
Cause
Change
Which
Leads to
Economic Activity
Which
Determines
Social Structure
Which
Comprises
Lifestyle
Stress on a Lifestyle
Which
Gives Rise to
Either
Or
No Adjustment or Maladjustment
Which
Leads to
Apathy
Anomie
Alienation
etc.
Adjustment
- by Individuals
by Community
by Government
Which
Leads to
Successful Management of Change

These are potential effects on communities as social units, on individuals and smaller social groupings.

evolved from traditional pursuits which developed gradually over several generations (Norway House, Brochet, Oxford House, etc.).

The industrial communities are largely dependent upon a single industry managed by one predominant organization. They are basically site specific in their resource use, but place demands for recreational and other services on resources which support traditional communities. The residents of these "urban" centres are highly skilled, articulate, and organized to influence governments in the development of their communities.

The traditional or "remote" communities with which this study is concerned are dependent on extensive use of land and water resources for their economic livelihood. The people settled in their particular locations because of land allocations, abundant fish and game resources (historically if not currently) or for the conveniences offered through early establishment of trading posts. They are less highly skilled than urban residents in the conventional sense of employable skills and usually lack physical access facilities. However, they are beginning to organize in order to communicate their needs to government.

There is a basic difference between the two in that the industrial communities emerged full blown as wage economies with strong ties to the general provincial economy and cultures, while the traditional communities have just begun to make the painful transition into the modern industrial age and are relatively isolated from the mainstream of provincial life.

In addition, there are fundamental differences between remote northern communities and rural communities in the southern part of the province. While each remote community is a separate entity with no surrounding populated area from which to draw, the agricultural centre has strong social and economic ties with neighbouring farmers and farm communities.

As a result of these unique characteristics, the problems facing northern remote communities are distinguishable from those facing other Manitoba centres. Therefore, conventional wisdom, which is based on assumptions relevant to southern rural communities, is inapplicable to northern remote communities. Similarly, such communities cannot be analyzed on the same basis as single industry northern communities.

2. REMOTE COMMUNITIES

In the early stage of development, the economy of remote northern communities was almost entirely dependent on the resource base. Residents satisfied their needs by gathering the products of the land, i.e., by fishing and trapping. There are two factors which make it difficult to maintain this reliance on traditional pursuits.

(a) Rising Populations and Limited Physical Resource Base

As shown below, the latest available statistics indicate that there will be a substantial increase in populations of remote northern communities by 1990, (assuming no in-or out-migration).

Table 1

POPULATION PROJECTIONS

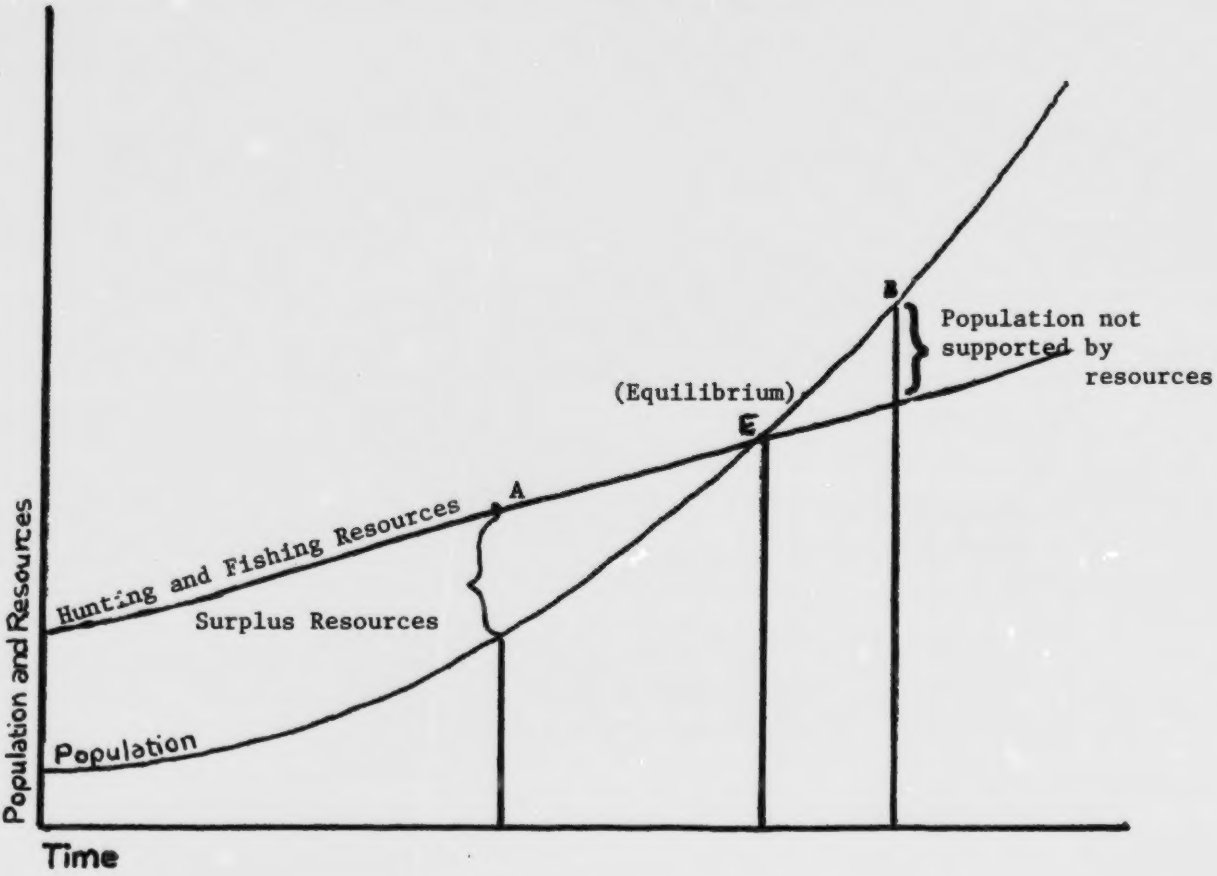
Community	1971	1975	1990
South Indian Lake	590	669	1,134
Split Lake	950	1,077	1,833
Nelson House	1,200	1,360	2,315
Cross Lake	1,917	2,174	3,698
Norway House	2,763	3,133	5,330

To a limited degree, the resource base can be expanded through more efficient use of potential fishing and hunting areas. However, it is unlikely that these relatively fixed resources can continue to maintain an increasing population, even at the present standard of living. It would be impossible to achieve and maintain a higher standard of living based on traditional use of physical resources. This problem has as yet been given little attention. However, it is significant in terms of future development (see Figure 7, p. 67).

(b) Conflicting Resource Needs

Of more immediate concern is the competition between industrial and traditional communities for physical resources. Because of their need for power, recreational facilities, etc., industrial communities inevitably encroach upon the resources available to the traditional communities. Under these circumstances, residents in these remote communities must find alternative means of satisfying their needs, both social and economic (see Figure 8, p. 68). In addition, if the encroachment takes the form of a construction project, the increasing availability of money and goods has an impact on the community's perception of "needs." Thus, the initial contact with a wage economy reinforces the trend away from traditional pursuits. This is particularly

POPULATION & PHYSICAL RESOURCE BASES



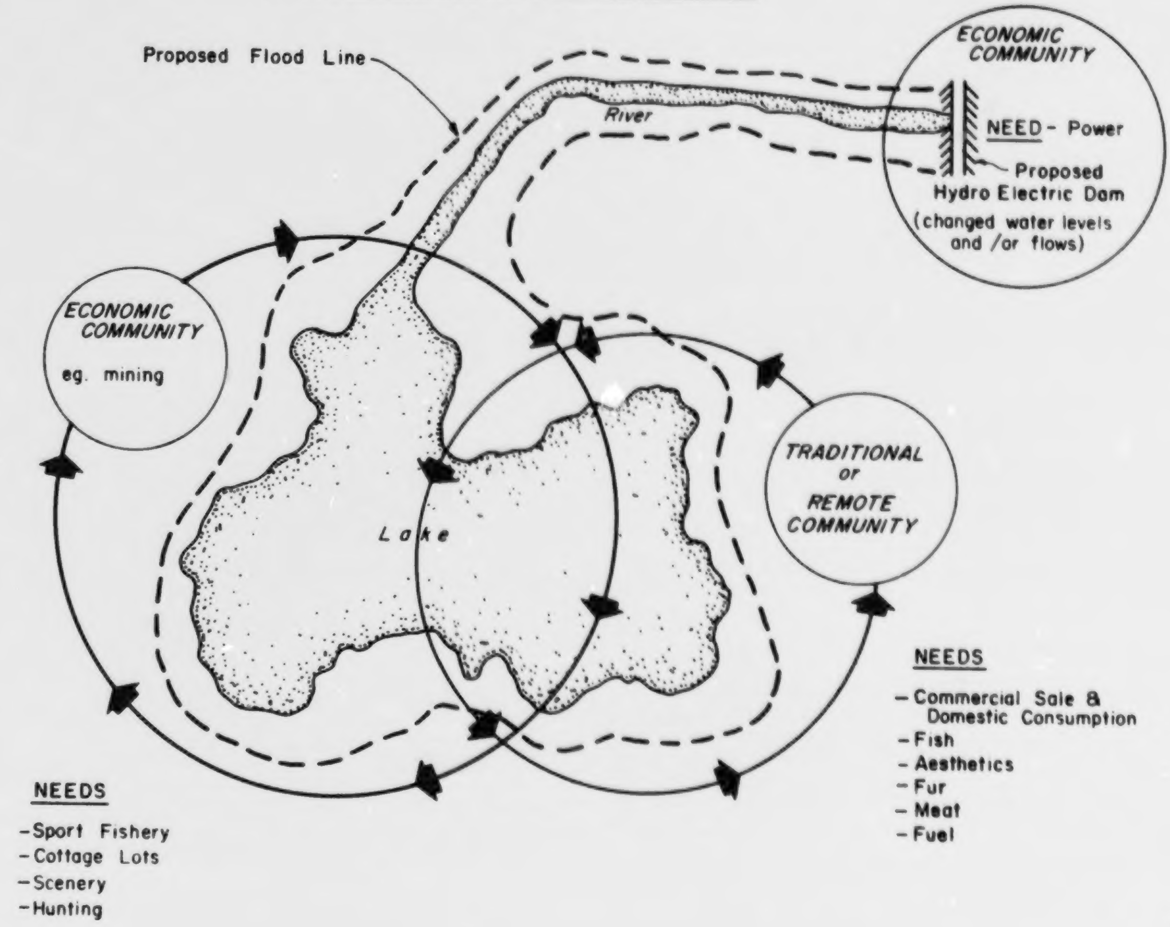
A = Resource base is not fully utilized.

E = Resource base is fully utilized and is supporting the population.

B = Resource base is fully utilized but is unable to support the entire population.

Figure 7

COMPETITION FOR PHYSICAL RESOURCES


Proposed Flood Line
ECONOMIC COMMUNITY
NEED - Power
Proposed Hydro Electric Dam
(changed water levels and /or flows)
River
ECONOMIC COMMUNITY
eg. mining
Lake
TRADITIONAL or REMOTE COMMUNITY
NEEDS
- Commercial Sale & Domestic Consumption
- Fish
- Aesthetics
- Fur
- Meat
- Fuel
NEEDS
- Sport Fishery
- Cottage Lots
- Scenery
- Hunting

This diagram indicates that the "traditional" or "remote community"* must compete with two "economic communities" whose competitive uses of the same resource base are overlapping and competitive.

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*"Traditional" or "remote" are used to describe a way of life quite different from the conventional life style most Canadians think about. This is not intended as a judgemental term but a descriptive one. This difference is often in addition to a physical remoteness in terms of transportation, communication, etc.

Figure 8

true of the young people, who are unwilling to accept the hard work, low financial returns, and isolation from families characteristic of traditional activities.

3. THE IMPACT OF HYDRO DEVELOPMENT

The operations of any developer, in this case Manitoba Hydro, may intensify the problems discussed above in two ways:

(a) they can have an impact on the physical resource base, and

(b) they provide the opportunity for intermittent encounters with the wage economy.

As a result, they are likely to accelerate the rate of change within those communities affected.

4. COMMUNITY SPECIFIC ANALYSIS

As shown above, the problems facing remote northern communities are different from those associated with both industrial northern communities and rural agricultural centres. In addition, there are some significant differences among the remote communities themselves. Although they share some common problems, each community has developed a distinctive lifestyle based on a particular set of circumstances.

Thus, although it is customary to divide Manitoba into regions for purposes of analysis, the unique characteristics of remote communities make this approach unsatisfactory. Although the communities under discussion are all located in northern Manitoba, they cannot properly be considered as comprising a homogenous unit. For this reason, the main emphasis in this study is on community impacts rather than on regional impacts.

C. SOCIAL AND ECONOMIC CONCEPTS

The impact of change on social structures is more difficult to predict and assess than economic impacts. For this reason, in most studies the social aspect has been either ignored or given only token mention. In this study, both social and economic impacts are considered. Fundamental to the approach used are two assumptions:

1) In the traditional society, social structure is a function of economic activity. Initially, a community organizes and develops in response to the need for food, shelter and clothing. The social structures which evolve are directed towards satisfying these economic needs.

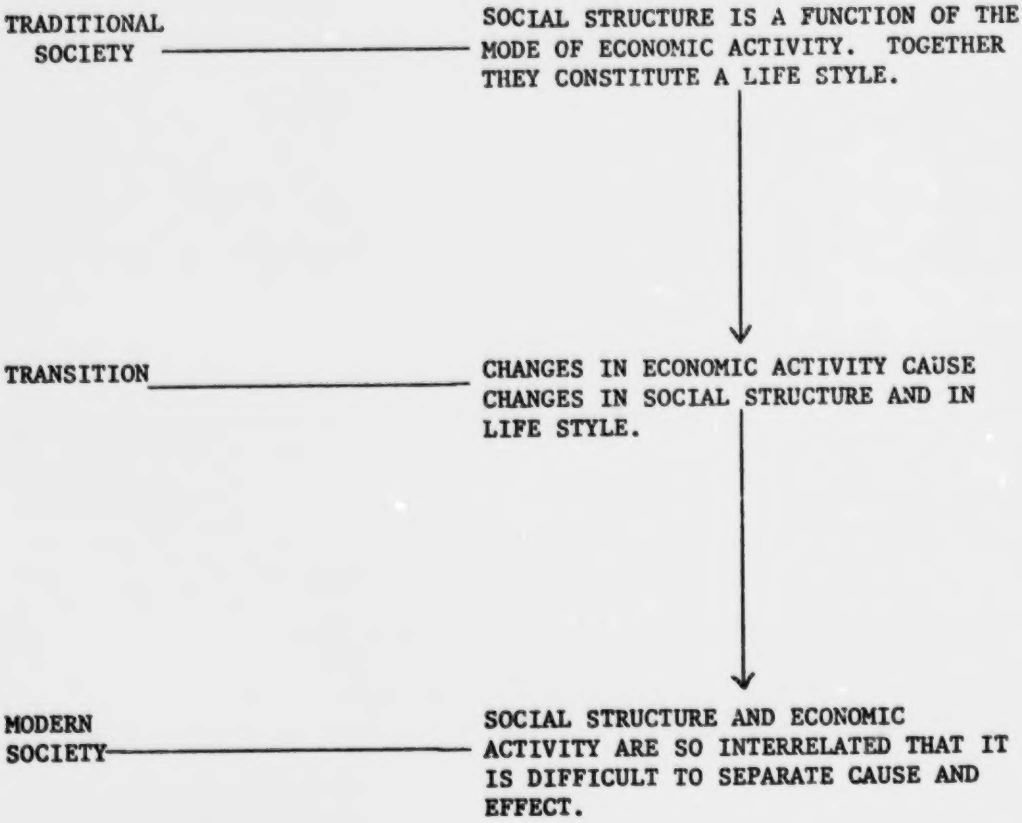
2) As community life becomes more complex, the line between social factors and economic factors becomes blurred. For example, the population distribution in a community cannot be clearly identified as either a social variable or an economic variable. Even in cases where such a division is possible, it is difficult to categorize factors on the basis of cause and effect. In more advanced communities, social attitudes and values may play a role in directing economic activity, as well as the other way around. (See Figure 9, p. 72.)

The communities discussed in this study have not developed far beyond the traditional stage. Therefore, an understanding of economic change can provide an insight into potential social impacts. In addition, there are well known and accepted methods for evaluating economic change, whereas social change is difficult to assess. Therefore, for purposes of convenience, the approach in this study is to:

1) discuss economic factors,

2) discuss social factors, and

SOCIAL & ECONOMIC RELATIONSHIPS



TRADITIONAL SOCIETY — SOCIAL STRUCTURE IS A FUNCTION OF THE MODE OF ECONOMIC ACTIVITY. TOGETHER THEY CONSTITUTE A LIFE STYLE.

TRANSITION — CHANGES IN ECONOMIC ACTIVITY CAUSE CHANGES IN SOCIAL STRUCTURE AND IN LIFE STYLE.

MODERN SOCIETY — SOCIAL STRUCTURE AND ECONOMIC ACTIVITY ARE SO INTERRELATED THAT IT IS DIFFICULT TO SEPARATE CAUSE AND EFFECT.

Figure 9

3) present a synthesis of the two elements.

Conceptually, there is no need to categorize variables in this way. Therefore, the concepts discussed below apply generally to variables which contribute to community organization and development.

1. INTERACTING COMMUNITY VARIABLES

A community is a "combination of social units and systems which perform the major social functions having locality relevance."[1] In other words, the overall function or objective of the community is to provide the mechanisms and institutions which perform these locality relevant functions.

There are five major social functions which collectively constitute the community function.

(a) Economic

An important function of the community is to provide local access to the production, distribution and consumption of goods and services.

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[1] Warren, Roland L., The Community in America, Rand McNally & Co.: Chicago, 1963, p. 9.

(b) Socialization

This is the process through which society transmits knowledge, social values and behaviour patterns to its members. The nuclear family, the extended family, and the school system are examples of institutions which perform this function.

(c) Social Control

The community also provides systems which ensure that the behaviour of members conforms to accepted norms. The police system is one example of a formal social control agency. Informal methods, such as expressed displeasure of elders, are characteristic of traditional societies, but are particularly affected by the move towards industrialization.

(d) Social Participation

An important community function is to provide access to local participation in various activities. Religious organizations, volunteer groups, etc., perform this function.

(e) Mutual Support

A community also organizes for the purpose of providing members with various types of support at the local level, e.g., care for the sick and elderly, assistance to the needy, etc. As with other social functions, mutual support is likely to become more formalized as a community becomes more industrially advanced.

The way in which the community fulfills the above functions depends upon several variables. Initially, it is constrained by its demographic base, its resource base, and the relationship between them. The skills, training, age, etc., of residents will play a significant role. Similarly, the community is constrained by the quality, accessibility and abundance of land resources.

Given these bases, the community function evolves from the interaction of four sets of variables.

(a) Economic Options

The available opportunities for earning a living has a significant impact on every other facet of community life.

(b) Community Organization

Each community is organized in a particular way for political, economic, social action, and decision making purposes.

(c) Individual Options

The options available to individual residents for recreation, culture, education, social style, and political involvement are significant in terms of their opportunities for personal development.

(d) Infrastructure

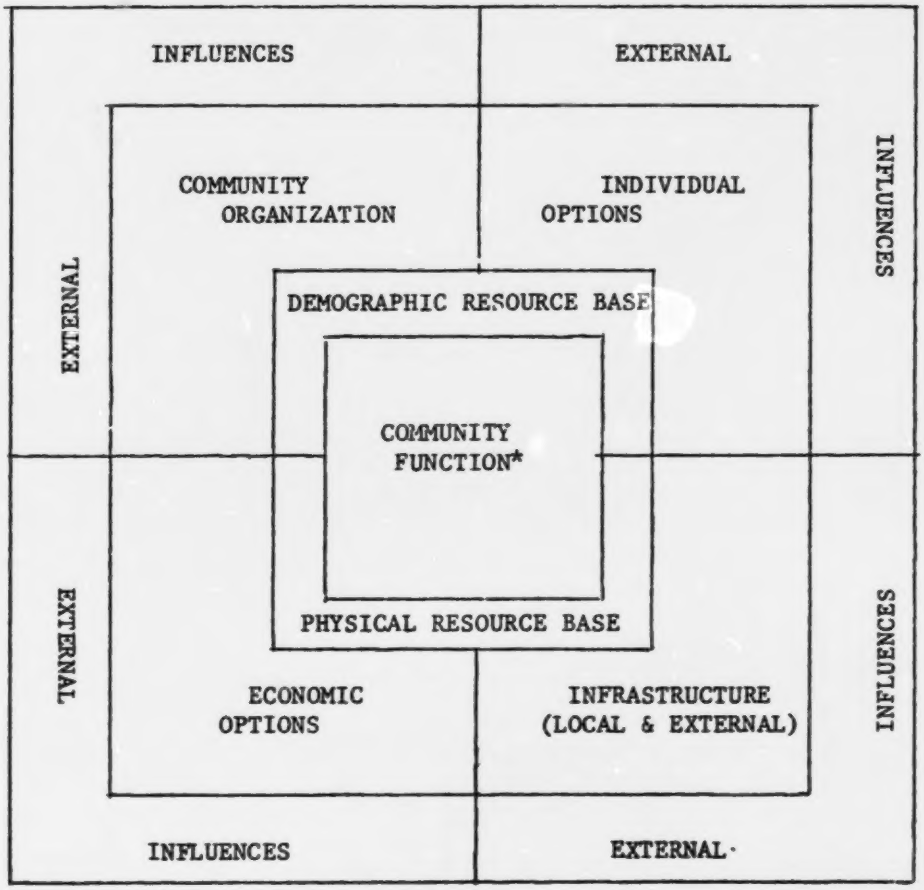
Another significant variable is the availability of man made facilities for recreation, transportation, communication and utilities.

Each of the variables will respond to both external and internal influences. (See Figure 10, p 78 .)

An example of the potential impact of change on the community is the way the various systems respond to the provision of a new access road. The construction of the road constitutes a change in the external infrastructure. If the road goes through town, there is also a change in the internal transportation system. Both changes could lead to a number of new opportunities.

For example, there could be improved access to new fishing and trapping areas, as well as to new markets for these products. This could lead to more employment opportunities for services such as freighting. The increased commodity flow could affect prices, transportation costs, credit availability, etc. The existence of the road, together with changes in job opportunities would have an effect on the real options available to residents for recreation, culture, mobility, etc. The community might respond to changes in economic and social options by organizing recreation committees, trapping associations, fishing associations, etc. Depending on how effectively it functions, the degree to which a community responds to such opportunities will vary.

INTERACTING COMMUNITY VARIABLES


INFLUENCES
EXTERNAL
COMMUNITY ORGANIZATION
INDIVIDUAL OPTIONS
EXTERNAL
INFLUENCES
DEMOGRAPHIC RESOURCE BASE
COMMUNITY FUNCTION*
PHYSICAL RESOURCE BASE
EXTERNAL
INFLUENCES
ECONOMIC OPTIONS
INFRASTRUCTURE (LOCAL & EXTERNAL)
INFLUENCES
EXTERNAL

* - production, consumption and distribution of goods and services.
- social control, e.g., the police system, disapproval of elders, etc.
- socialization, e.g., the school system.
- mutual support, e.g., hospital care.
- social participation, e.g., church, volunteer groups.

Figure 10

Thus, given a particular demographic and physical resource base, the social and economic impact of a new development project may be assessed on the basis of its effect on the dynamics of interacting community variables.

In order to make such an assessment, it is necessary to examine, in more detail, the ways in which the five basic functions (see pp. 73 to 75) are performed. In general, hydro development can have an effect on two distinct _types_ of community function.

(a) It can have tangible effects on _income and employment_ (see Section 2 below).

(b) It can have less tangible effects on the _social systems_ of the community (see Section 3 below).

2. INCOME AND EMPLOYMENT

In traditional societies, the economic status of the family is dependent upon family income, rather than on the income of individuals. Therefore, the main thrust of the economic analysis in this study is in terms of the net income per household of communities within the study area, rather than on net income _per capita_. A detailed account of the methodology used in evaluating the income effects of hydro development is presented in Appendix I. In this section, a brief discussion is sufficient to provide a background to the economic analysis.

(a) The Demographic Resource Base

The age and sex distribution of the population in the remote communities of northern Manitoba is substantially different from the provincial, northern industrial, and southern rural distributions. (See Figure 11, p. 81.) This unique distribution has significance in terms of the options currently available to the community and how these will change as younger residents enter the labour force. For example, approximately 51% of the population in the remote community of Little Grand Rapids is under 15 years of age, as compared with 26-27% for Manitoba as a whole, 35% for the rural communities of the Interlake region, and 31% for the Town of Thompson.

The high preponderance of future parents implies that, barring a substantial increase in outmigration, population in remote northern communities will be increasing at an accelerated rate over the next generation. Thus, their economies must expand in order to support the

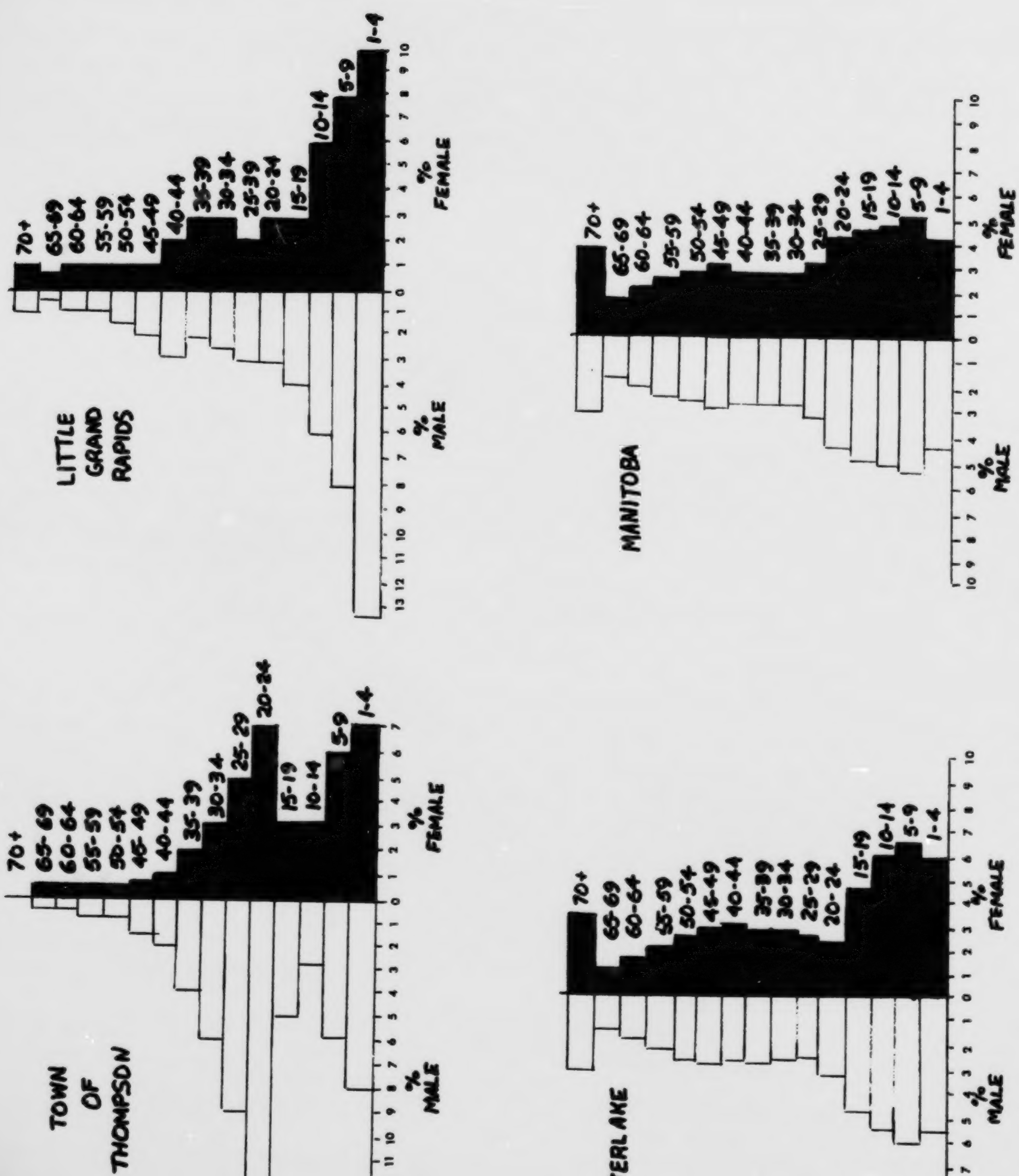


Figure 11 - Population Distribution

increasing numbers who will be entering the labour force. In addition, the high dependency rate means that in these communities a smaller group of working people is supporting a larger group of dependents than is the case for other Manitoba communities.

(b) Economic Subdivisions

The economy of a remote community may be viewed as a composite of three basic sub-economies. These are:

1) the traditional economy based on hunting, fishing and trapping,
2) the wage economy based on work for wages,
3) the transfer payment economy, based on Family Allowances, Old Age Pension and Social Assistance, etc.

The family which works as a unit is characteristic of the traditional economy, whereas the wage economy is based on the individual wage earner.

Families or individuals may earn their income from any one or combination of these three groups. For example, a trapper may supplement his income by taking part-time employment. In addition, government funded short term employment projects, such as PEP, LIP, etc., provide income to persons who would otherwise be unemployed. Therefore, such programs are associated with both the wage economy and the transfer payment economy.

1) The Traditional Economy

The primary sources of income in the traditional economy are fishing and trapping. However, as indicated, the limited resource base, expanding population, and declining interest of the young in the traditional ways of earning a living are causing difficulties in maintaining an economy based on such activities.

2) The Wage Economy

The major source of employment in the wage economy has been construction projects. With hydro development, more residents are likely to be influenced by the availability of attractive construction jobs. In addition, more of the labour force could move into services such as taxi, cartage, etc. The future development of remote communities will depend largely on the capacity of the wage economy to absorb those who wish to move out of the traditional economy. For a number of reasons, this may be difficult to achieve. There may be insufficient jobs available, and those that are may be of short duration or require more skills or training than local applicants have to offer. Thus, with the completion of construction, some residents who have become accustomed to a lifestyle associated with the wage economy will be unable to find work within their own community.

3) The Transfer Economy

The encroachment of industrialization can have a serious impact on residents who are unable to maintain their traditional lifestyle. Without a positive employment strategy designed to provide alternative sources of income, many individuals will be unable to make the necessary adjustment.

Since the mid 1960's, the move away from traditional pursuits, combined with the scarcity of alternative economic opportunities, has resulted in transfer payments becoming a significant (and often more attractive) source of income for residents of northern communities.

To illustrate this point, in 1972 the average _per capita_ social assistance for treaty residents in a number of northern communities was approximately $150 annually. By comparison, the average for Manitoba as a whole was between $65 and $70.* (See Figure 12, p. 86.)

(c) Entrepreneurial Activities

Until recently, entrepreneurial activities in remote communities have been limited. However, some local residents have recognized and taken advantage of opportunities to operate successful businesses. In future, there could be both more opportunities and more individuals with the personal resources, ingenuity and drive to respond. The plans and activities of such entrepreneurs are likely to have an impact on the future economy of remote communities.

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*Barber, _Welfare Policy in Manitoba_, 1972.

PER CAPITA SOCIAL ASSISTANCE PAYMENTS TO RESERVES – 1972

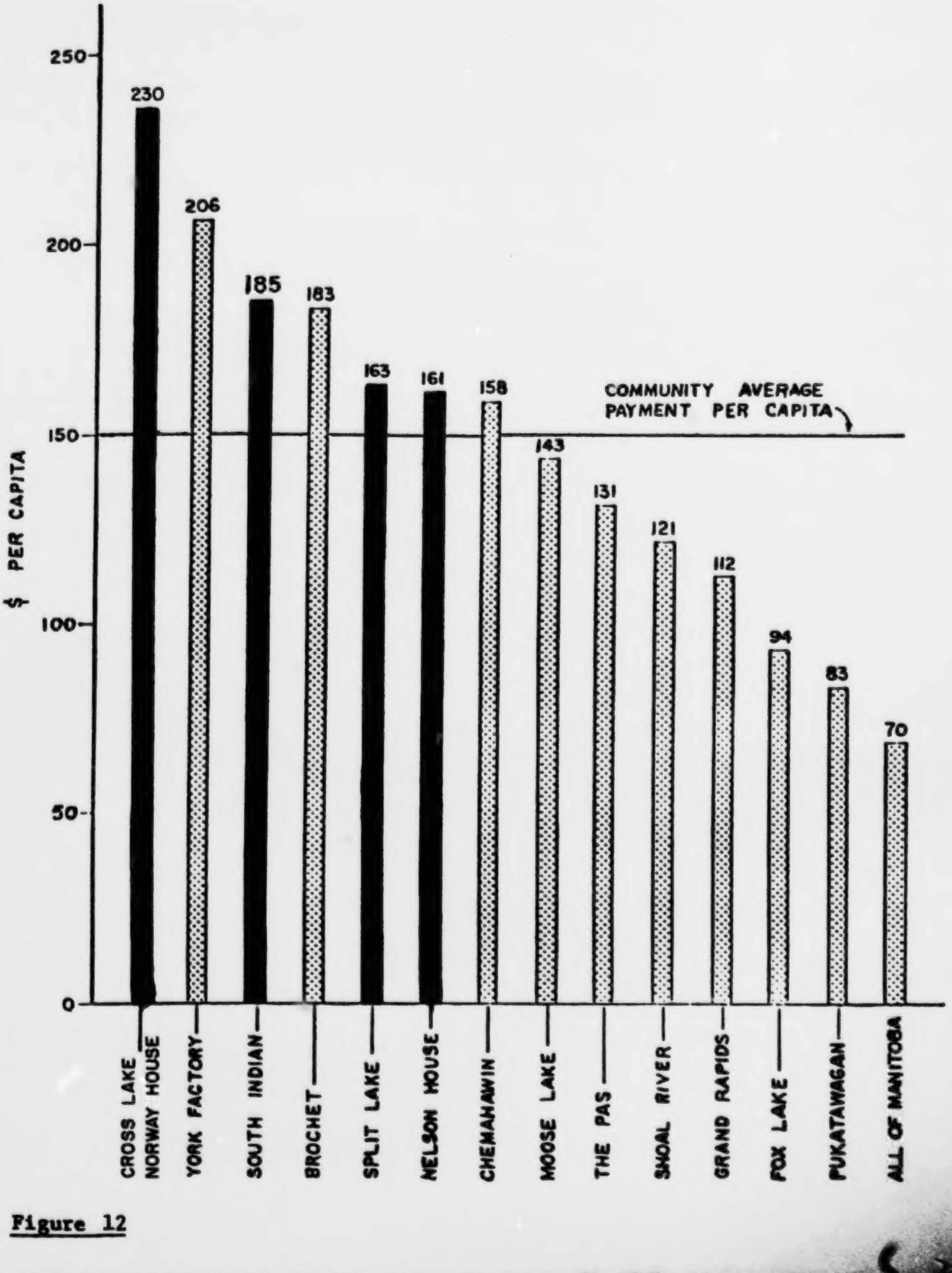

Figure 12

(d) Developing an Employment Strategy

Given the difficulties associated with traditional activities and the scarcity or short term nature of wage employment, it may be increasingly difficult for the economy to support the expanding population. This would have an impact on the right of individuals to choose the way in which they wish to earn their living. Some will prefer to remain in the traditional economy, while others will choose to work for wages. Still others may elect to migrate elsewhere.

What is needed is an employment strategy which will accommodate the needs of those who wish to remain and at the same time retain their freedom to choose among viable alternatives. The approach taken towards this objective is outlined in the section entitled, "Compensation and Development," pp. 97 to 113 .

3. SOCIAL SYSTEMS

(a) Elements and Processes of the Social System

Community residents work together towards solving their problems. In time, "patterns of behaviour develop around such recurring issues as making a living, raising a family, and making decisions which affect most members of the community."[1] A "social system" is defined as the patterned interaction between community members. There are a number of interrelated elements associated with the pursuit and achievement of community functions. These elements find expression and the functions are performed through various recognized processes. The elements and processes associated with the social system of a community are:

Elements

- History
- Knowledge, Beliefs
- Values & Sentiment
- Attitudes
- Norms
- Goals
- Leadership: Power Structure
- Facility: Resource Infrastructure, Technology

Processes

- Communications: Internal, External
- Boundary Maintenance
- Systemic Linkages
- Socialization
- Social Control
- Problem-Solving & Decision-Making

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[1] Connor, Desmond M., Understanding Your Community, Antigonish, Nova Scotia, 1964, p. 7.

The ways in which these elements interact and are articulated have a direct bearing on community response to social change. For example, boundary maintenance is a process which protects the identity of a social group and maintains the pattern of interaction between members. In effect, group members impose boundaries which delineate acceptable patterns of behaviour. When they are exposed to other social systems with unfamiliar values and norms, they may respond by either:

1) resisting the new influence and maintaining their traditional boundaries, or

2) expanding their boundaries to accommodate the new influence.

Thus, an examination of the elements and processes characteristic of specific communities will provide an understanding of their capacity to cope with change and provide a baseline community profile against which the social impact of change may be evaluated.

(b) Horizontal - Vertical Linkages

Within each community, there are a number of agencies or groups which deal with particular areas of interest. Each group may be either directly responsible or closely related to an external agency (vertical linkage). For example, the activities of the local branch of the Manitoba Indian Brotherhood will be influenced by the objectives of the parent organization. In addition, the local groups may interact in pursuing community objectives (horizontal linkage). (See Figure 13, p. 91.)

The strength of these relationships are significant in terms of local autonomy. The stronger the link between local agencies, (the horizontal linkage) the more integrated the community. This, in turn, leads to more local autonomy and increased capacity to cope with local problems. On the other hand, if ties with external interests are stronger than those between local groups, the community will be less able to develop and implement co-ordinated plans. Thus, the viability of a community may be determined by examining the relative strength of the horizontal and vertical linkages associated with local organizations.

(c) The Political Community:

Historically, the power structure in a traditional community has been depicted as forming a pyramid, with a few

COMMUNITY
VERTICAL-HORIZONTAL LINKAGES

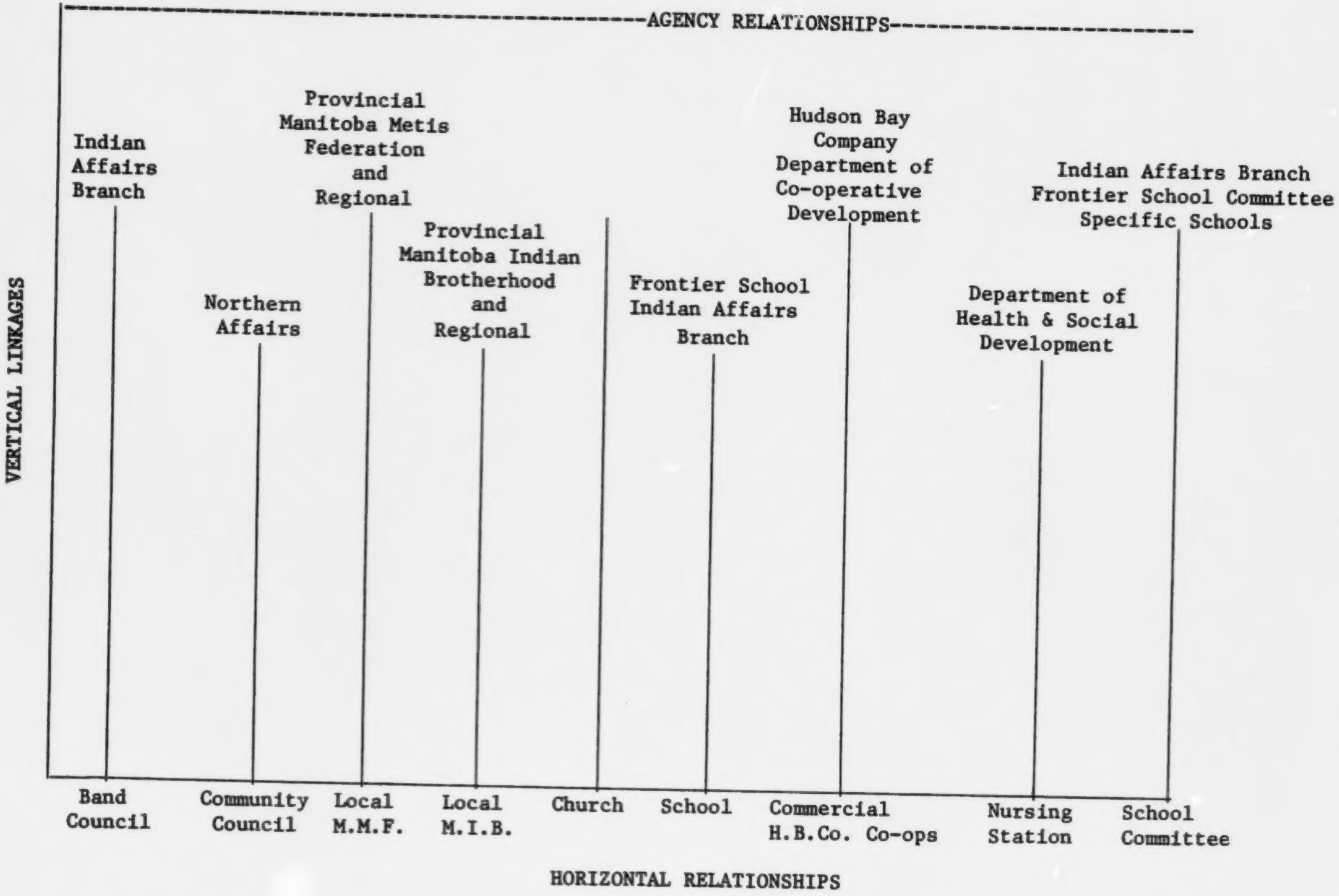

AGENCY RELATIONSHIPS
VERTICAL LINKAGES
Indian Affairs Branch
Northern Affairs
Provincial Manitoba Metis Federation and Regional
Provincial Manitoba Indian Brotherhood and Regional
Frontier School Indian Affairs Branch
Hudson Bay Company Department of Co-operative Development
Department of Health & Social Development
Indian Affairs Branch Frontier School Committee Specific Schools
Band Council
Community Council
Local M.M.F.
Local M.I.B.
Church
School
Commercial H.B.Co. Co-ops
Nursing Station
School Committee
HORIZONTAL RELATIONSHIPS

Figure 13

leaders at the apex assuming power and making decisions on behalf of the majority of residents along the base. The relevance of the simple power pyramid is rapidly diminishing due to the increasing complexity and diversity of community systems. Most remote northern communities consist of two separate entities, the non-treaty group (including non-Indians) and the treaty group, each with its own formal power structure.

In some cases, these entities deal with similar issues but have clearly delineated areas of responsibility. For example, the treaty and non-treaty entities are both involved in local government administration but receive their authority under different Acts, i.e., The Indian Act and the Northern Affairs Act, respectively. Outside of local government administration, separate sectors, such as housing committees and economic development committees, are developing their own power structures within each entity.

In other cases, the two entities share responsibilities by joining forces on school committees, health committees, church boards, flood committees and co-operative organizations. Such groups are developing separate power structures and draw support from both entities.

In addition, external agents, such as government representatives and church leaders, influence decision-making and thus the power structure of both entities. (See Figure 14, p. 94.)

In this study an attempt is made to examine the power patterns applicable to each community.

(d) Community Problem Solving & Decision Making

In order to function effectively, a community must develop viable problem-solving and decision-making processes. This involves a number of stages:

1) recognize that a problem exists,

2) have the desire to solve the problem,

3) have access to the information needed to develop alternative solutions and select the most appropriate,

4) develop a mechanism for implementing

EMERGING POWER PATTERNS

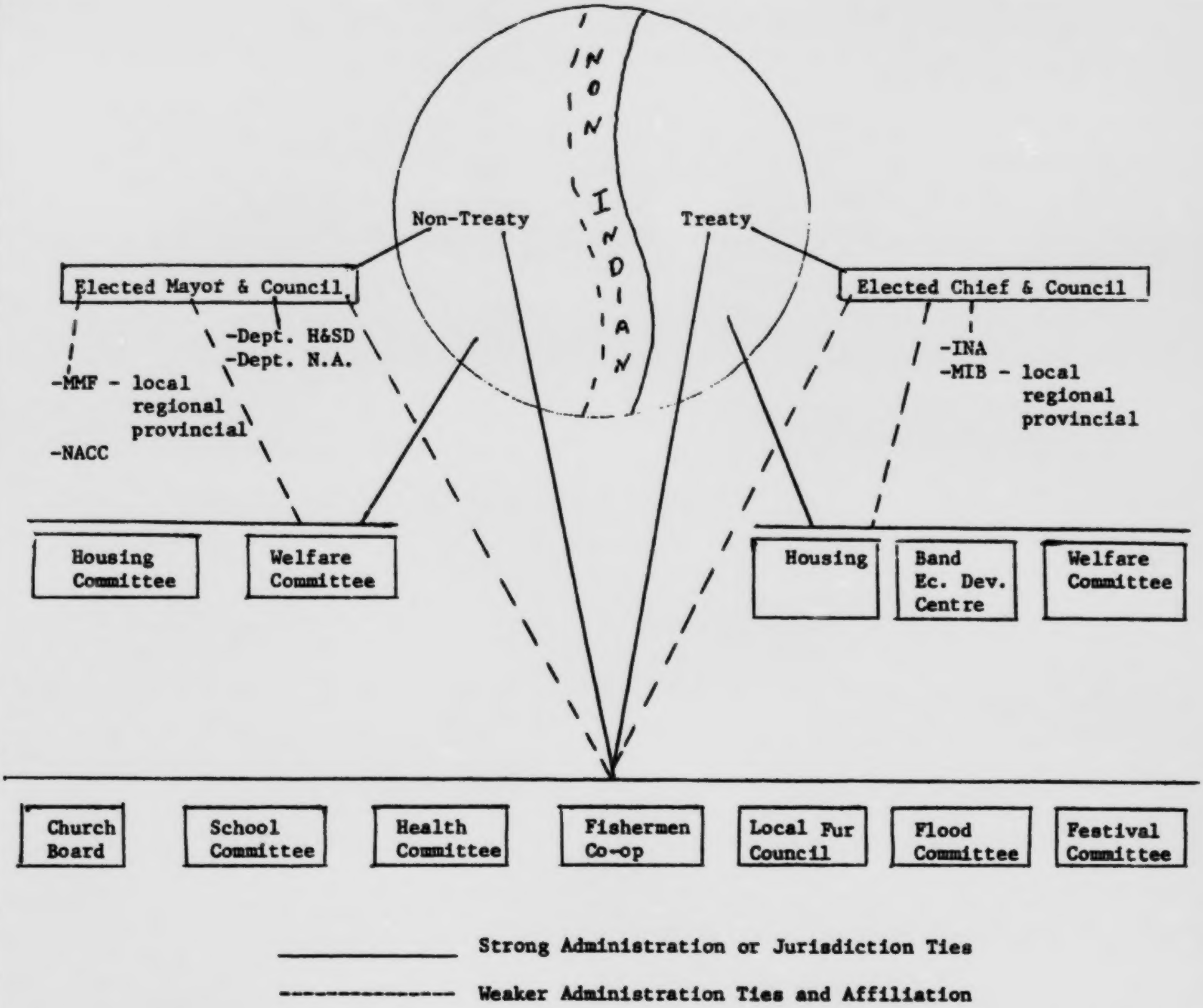

NON INDIAN
Non-Treaty
Treaty
Elected Mayor & Council
Elected Chief & Council
-Dept. H&SD
-Dept. N.A.
-MMF - local
regional
provincial
-NACC
-INA
-MIB - local
regional
provincial
Housing Committee
Welfare Committee
Housing
Band Ec. Dev. Centre
Welfare Committee
Church Board
School Committee
Health Committee
Fishermen Co-op
Local Fur Council
Flood Committee
Festival Committee
Strong Administration or Jurisdiction Ties
Weaker Administration Ties and Affiliation

Figure 14

the appropriate course of action, and

5) have the capacity to evaluate the results of specific programs with a view to adopting them in similar situations.

Figure 15, p. 96 indicates the importance of effective decision making. As illustrated, if decisions lead to successful action, the action becomes part of the overall community environment, i.e., an expanded base upon which more complex decisions can be based. If, on the other hand, the action fails to achieve the desired result, the community base spirals inwardly or regresses. Examples of this cause could be:

1) the problem was not fully understood, or

2) action was taken prematurely.

Therefore, it is critical that decisions progress on a "success" basis, reaching but not overtaxing the capacity of the community to handle them. The resulting satisfaction will reinforce the community's confidence in its ability to deal with problems effectively.

COMMUNITY DECISION-MAKING IMPACT MODEL

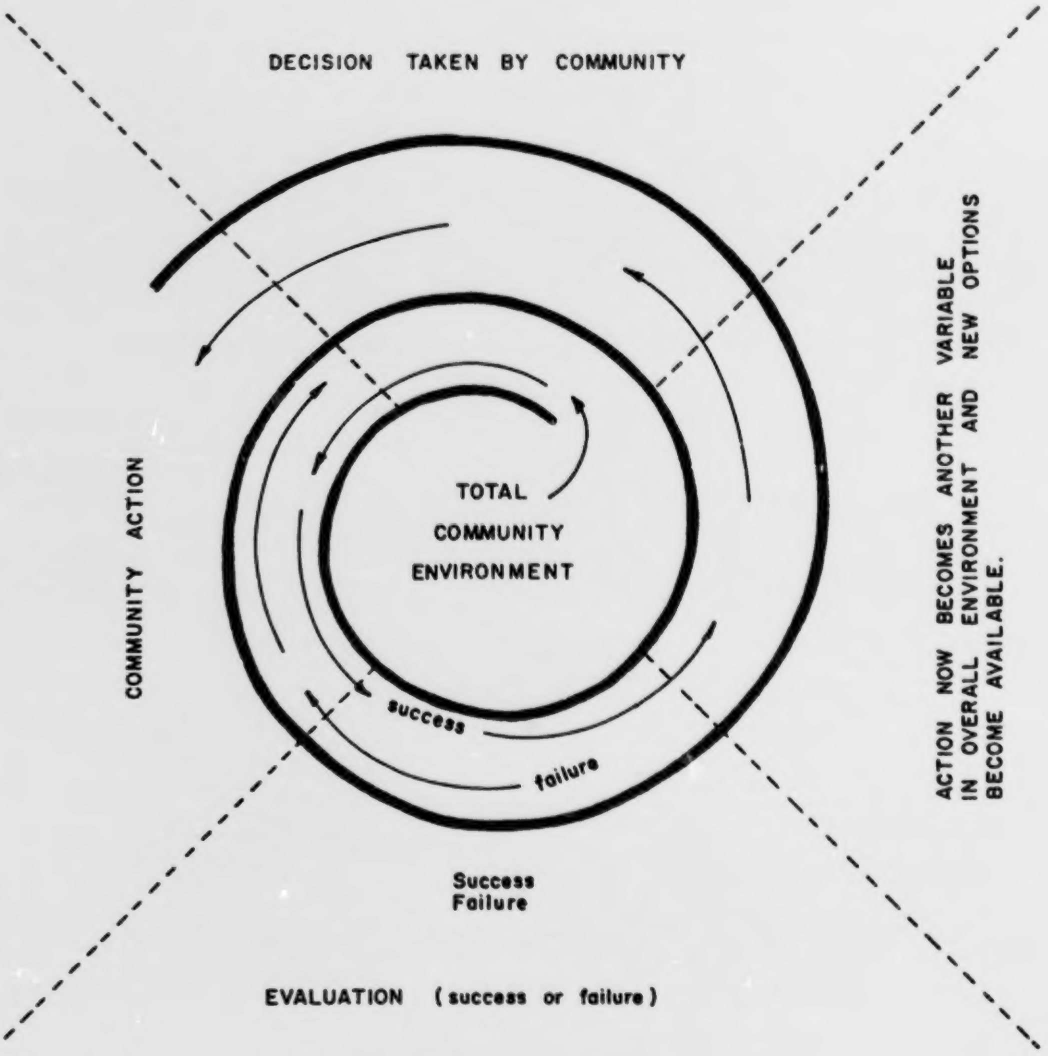

DECISION TAKEN BY COMMUNITY
COMMUNITY ACTION
TOTAL COMMUNITY ENVIRONMENT
success
failure
ACTION NOW BECOMES ANOTHER VARIABLE IN OVERALL ENVIRONMENT AND NEW OPTIONS BECOME AVAILABLE.
Success
Failure
EVALUATION (success or failure)

Figure 15

D. COMPENSATION AND DEVELOPMENT

One of the objectives of the study is to recommend measures to alleviate the stress associated with change. Both compensation and development are means towards this end. Not only must those affected be compensated for what they have been forced to relinquish; they must also be provided with any assistance they require to adjust to social change.

1. SOCIAL CHANGE

There are six elements which impinge upon the process of change: (See Technical Report #1, Social Change and Stress.)

1) the method and extent of communication used by the change agent,

2) the degree of participation obtained from those directly concerned,

3) the extent to which innovation is adapted to existing cultural patterns,

4) the extent to which local residents feel the need for change,

5) the extent to which local residents perceive

any benefits from change, and

6) the extent to which traditional leaders are involved in the planning and implementing of innovations.

In other words, social change cannot be viewed as a process which is proceeding along a fixed course to a fixed destination. Social attitudes can modify and reshape the impact of change. Therefore, in order to benefit, communities must be adequately informed and actively involved in the entire process.

Similarly, principles governing compensation and development must relate to the needs of the people, according to their own assessment of such needs.

2. OBJECTIVE

From the standpoint of compensation and development, the prime objective is to ensure that communities, families and individuals are at least as well off with the development project as they would have been without it. For this objective to be meaningful, it is necessary to identify the yardstick to be used in measuring the well-being of those affected.

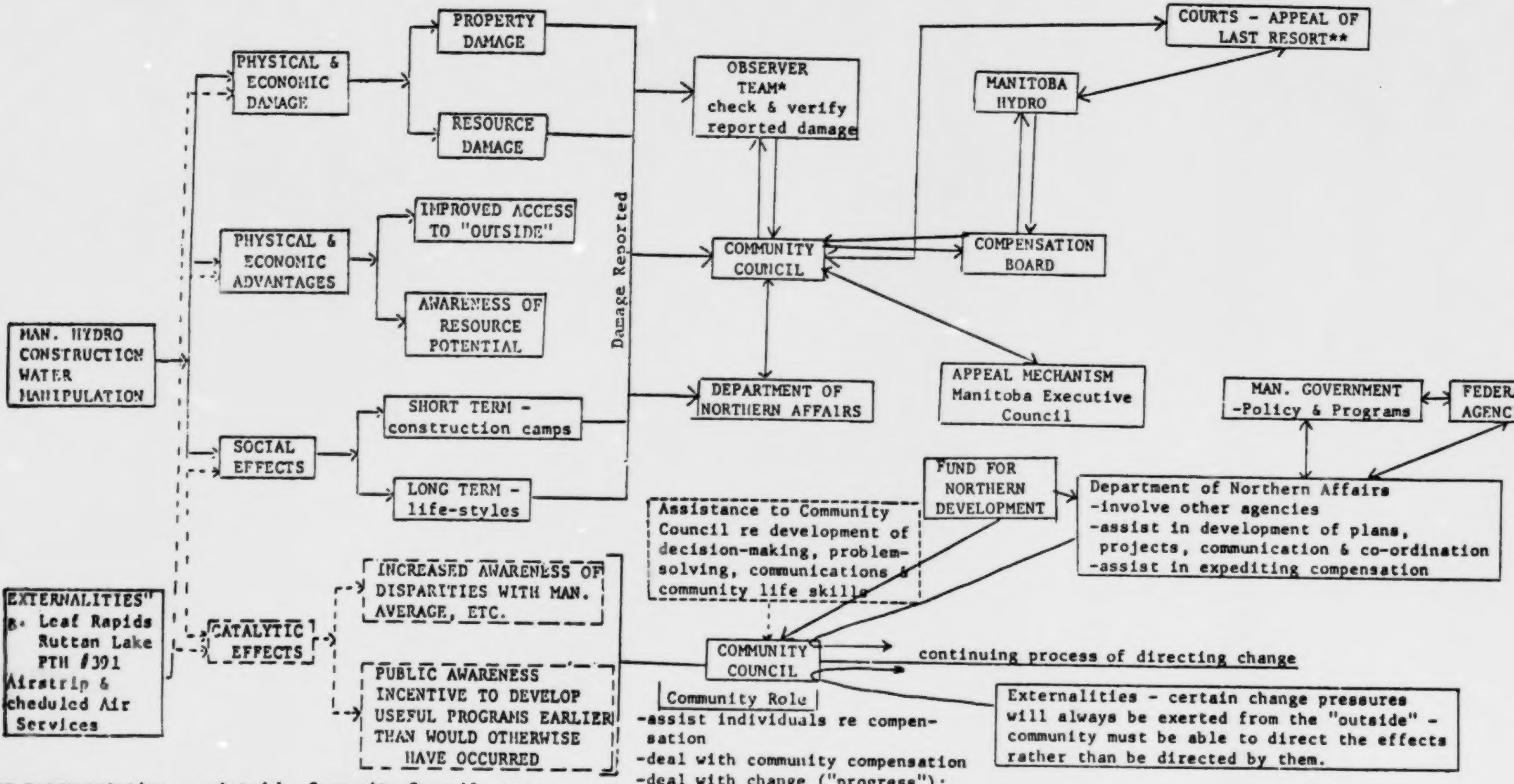
In this study, the principle of local involvement is an integral part of the approach. It is the people directly concerned who must be satisfied that they are "at least as well off." Implicit in this approach is the freedom of local residents to either remain in the traditional economy or move into the wage economy, as they see fit. For this reason, community members should be given the opportunity to help formulate the available choices, join in discussion regarding the relative merits of such alternatives, and select the best option on the basis of these discussions. A major function of external agencies is to provide the information, advice and assistance required for this purpose.

3. THE ROLES OF HYDRO AND GOVERNMENT

All developers have a responsibility to compensate communities in the vicinity of their operations for physical damages imposed. In addition, government has an obligation to compensate residents for intangible losses suffered as a result of development. For a schematic presentation of change agents, the changes they impose, and compensation and development processes, see Figure 16, p. 100.

In the case of hydro development and the remote communities affected, there are three categories of damage:

COMPENSATION AND DEVELOPMENT


MAN. HYDRO CONSTRUCTION WATER MANIPULATION
EXTERNALITIES" a. Leaf Rapids Ruttan Lake PTH #391 Airstrip & Scheduled Air Services
PHYSICAL & ECONOMIC DAMAGE
PHYSICAL & ECONOMIC ADVANTAGES
SOCIAL EFFECTS
CATALYTIC EFFECTS
PROPERTY DAMAGE
RESOURCE DAMAGE
IMPROVED ACCESS TO "OUTSIDE"
AWARENESS OF RESOURCE POTENTIAL
SHORT TERM - construction camps
LONG TERM - life-styles
INCREASED AWARENESS OF DISPARITIES WITH MAN. AVERAGE, ETC.
PUBLIC AWARENESS INCENTIVE TO DEVELOP USEFUL PROGRAMS EARLIER THAN WOULD OTHERWISE HAVE OCCURRED
Damage Reported
OBSERVER TEAM* check & verify reported damage
COMMUNITY COUNCIL
DEPARTMENT OF NORTHERN AFFAIRS
MANITOBA HYDRO
COMPENSATION BOARD
COURTS - APPEAL OF LAST RESORT**
APPEAL MECHANISM Manitoba Executive Council
MAN. GOVERNMENT -Policy & Programs
FEDERAL AGENCIES
FUND FOR NORTHERN DEVELOPMENT
Department of Northern Affairs -involve other agencies -assist in development of plans, projects, communication & co-ordination -assist in expediting compensation
Assistance to Community Council re development of decision-making, problem-solving, communications & community life skills
COMMUNITY COUNCIL
continuing process of directing change
Community Role
-assist individuals re compensation
-deal with community compensation
-deal with change ("progress"); new, more & more complex decisions
-deal with outside agencies
Externalities - certain change pressures will always be exerted from the "outside" - community must be able to direct the effects rather than be directed by them.

*One representative appointed by Community Council, one by Department of Northern Affairs

**Last resort only because many of the issues may be moral ones rather than legal ones because the principles of behaviour to be conformed with in matters such as these are still being argued out politically and have therefore not yet been set down in law.

Figure 16

1) damage to livelihood, such as lost traplines, etc.,

2) damage to infrastructure, such as flooded docks, etc., and

3) adverse effects on lifestyle.

Appropriate compensation for physical damage to shorelines, traplines, roads, etc., is basically a Hydro responsibility and is relatively easy to establish. The third category of damage is primarily a provincial government responsibility and requires an effective development program.

(a) Hydro's Responsibility

1) To deal with individuals regarding compensation to traplines, fishing areas, etc.

   Since the extent of physical damage is often difficult or impossible to predict, it would be advisable to provide for interim compensation payments for such losses. Final payment could be made following a 5-year monitoring period, if the full extent of the damage is known. There should be no cut-off date if investigations indicate that damage will be a perennial occurrence.

2) To deal with the Mayor and Council, the Chief and Council or their designated agents, regarding damage to infrastructure, community traplines, etc.

3) To be represented on a Compensation Board which monitors and assesses damage.

(b) Provincial Government Responsibility

1) To provide information to those communities affected.

2) To co-operate with local residents in devising an effective development program.

3) To monitor and facilitate, where necessary, compensation procedures and payments.

4. GOVERNMENT SPENDING

There are two types of programs which governments can undertake in an effort to meet community needs:

1) maintenance programs are directed towards maintaining community members at a predetermined level of subsistence, i.e., welfare programs,

2) participatory programs are designed to encourage community members to become actively involved in improving their standard of living.

In the long run, participatory programs are likely to be more effective relative to their cost to society, despite the fact that maintenance programs may be less costly at a particular point in time.

The potential return from participatory programs depends upon the intensity of public effort required to achieve the full participation of community members. This, in turn, depends upon the varying degrees to which individuals are prone to participate in their economy. In other words, it requires a higher public expenditure to induce low participators to become involved than is the case for their more active neighbours.

From the standpoint of participation, there are five categories of community residents:

(a) Active

Achieves his desired standard of living largely as a result of personal initiative; the main requirement of the economy is full employment and reasonable stability.

(b) Moderately Active

Depends to some extent on universal public programs such as job placement, credit, non-subsidized housing assistance, etc., but demands relatively little public assistance.

(c) Average

Not as fully aware of opportunities so requires stimulation and encouragement in the form of advisory services, counselling, training assistance, and for example, special credit and housing assistance to achieve an improved standard of living.

(d) Passive

Does not normally seek out opportunities in any aggressive way: fairly intensive counselling required over a period of time along with training and other assistance (e.g. Manpower Corps) that will allow the individual to adjust to the world around him and become a participating member.

(e) Chronically Dependent

Conceivably, there are individuals who, because of physical or mental impairments, or because of the type of environment in which they were raised, are incapable of actively participating in the economy and paying their own way without excessively high assistance costs.

In northern Manitoba communities, the majority of residents are clustered in the average category, with a smaller amount at each extreme. Thus, the distribution follows the standard bell-shaped curve (see Figure 17, p. 106).

Relative merits of participatory and maintenance programs can be assessed on the basis of the above distribution.

THE MAKE-UP OF SOCIETY

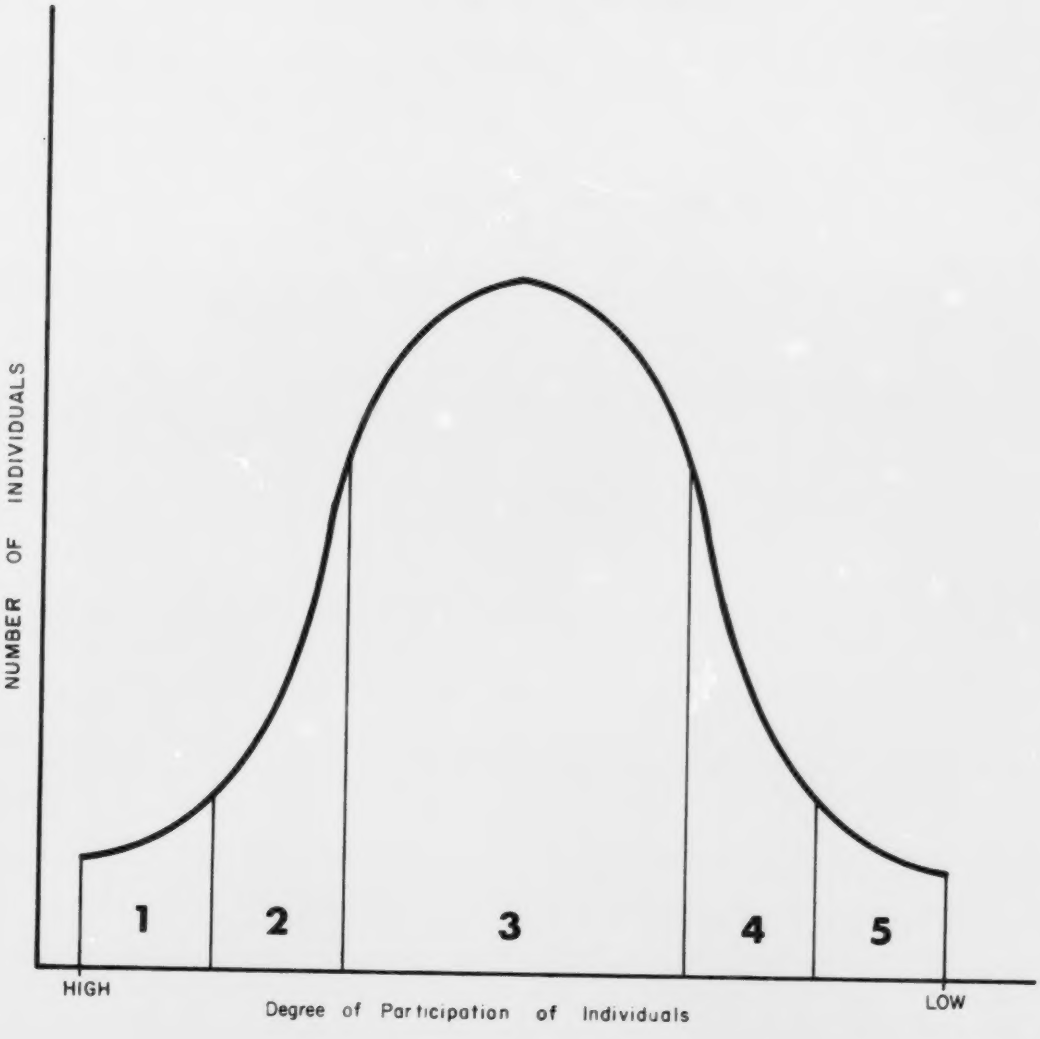


Figure 17

In estimating the cost of programs, the concept of "productivity" is seldom considered. Therefore, "gross" or total costs are used as a basis of evaluation (See Figure 18, p.108). Once the cost of a "participatory" program reaches the "maintenance" cost (point A), the switch to "maintenance" is automatic. Since the direct productivity of maintenance programs is zero, the automatic switch causes actual productivity to divert off the normal slope from A and fall directly to zero at E. If, on the other hand, programs are evaluated on a "net" productivity basis, expenditures on participatory programs would be made until the net cost of this approach reached the net cost of the maintenance system BD = AE. Beyond that point, total cost minus productivity would be higher than welfare costs.

It is within this context that Manpower Corps has been developed to function so that costs directly related to productivity are a charge against that productivity (AEFD), while costs directly related to training and orientation become a charge against that program objective (ABD). Although the total cost of training is ABD, the actual net cost is the smaller portion above the maintenance line (ABC).

By superimposing the two previous diagrams, as shown in

RELATIONSHIP OF GOVERNMENT SPENDING TO PARTICIPATION OF INDIVIDUALS

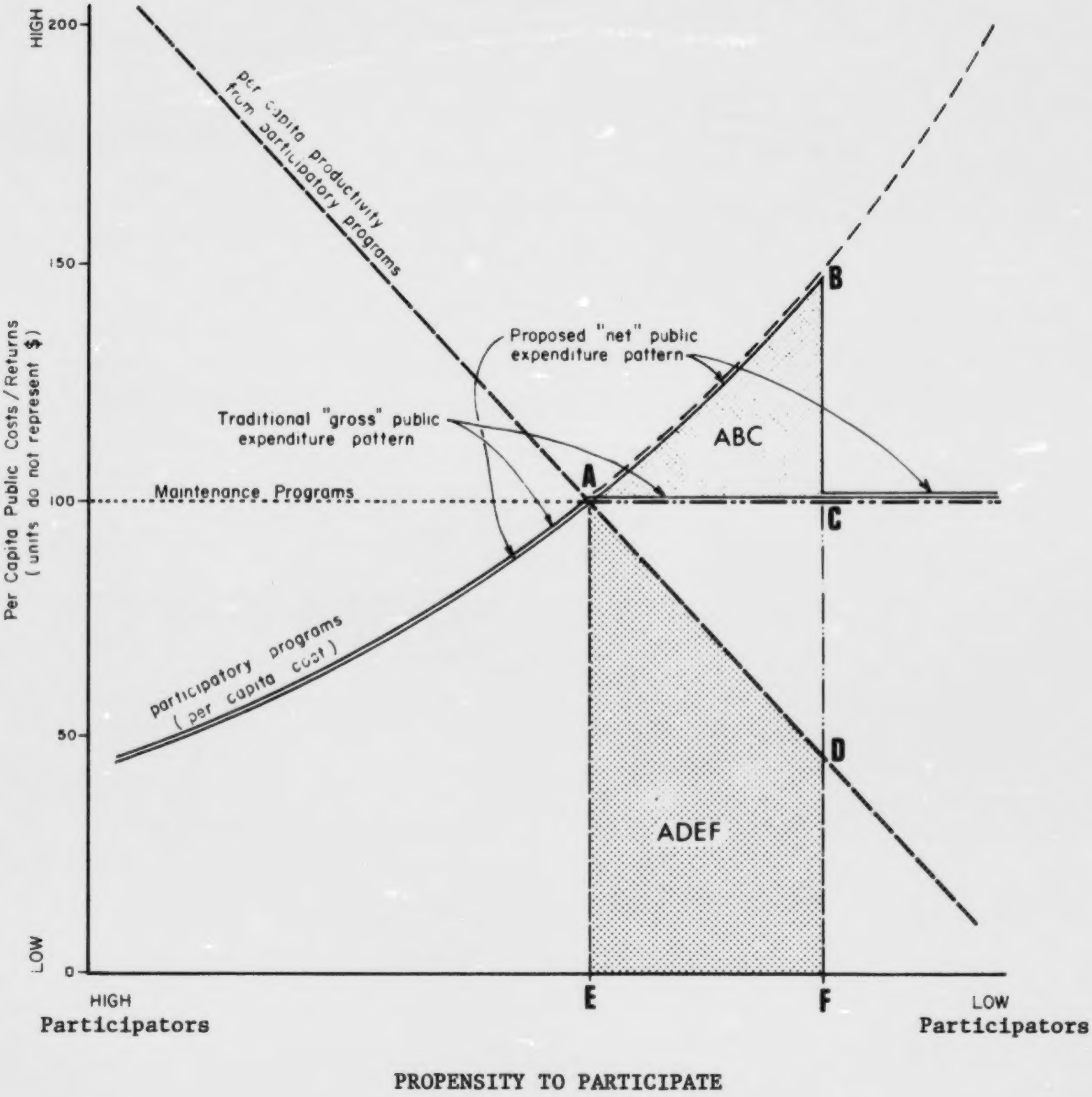


Figure 18

Figure 19a, below, it can be noted that the "break-even" point between net costs of participation and maintenance is not necessarily fixed, but rather is dependent on an individual's awareness, motivation, aspirations and decision-making capability, as well as on the external situation (including programs) providing him/her with an environment of real choices.

Following this line of thought, a major power development could have two effects (and, consequently, provides two means for dealing with them). First, choices to individuals in the context of their traditional lifestyle will become more limited, at least in the short run. Therefore, there is a need to consider ways of

GOVERNMENT EXPENDITURES AND LOCAL PARTICIPATION

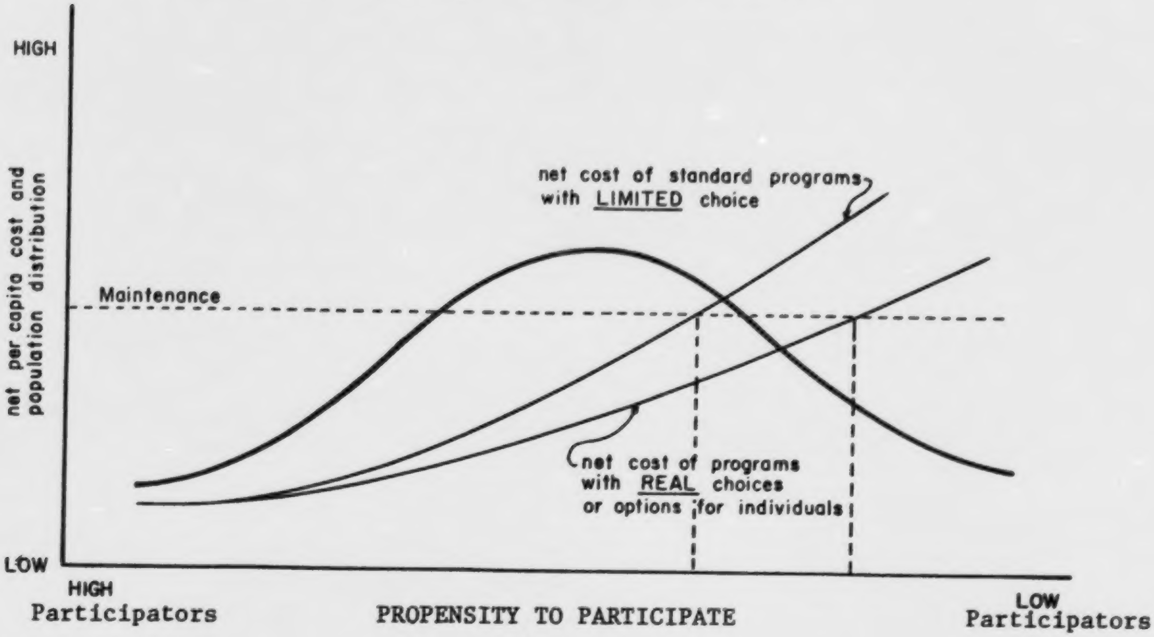
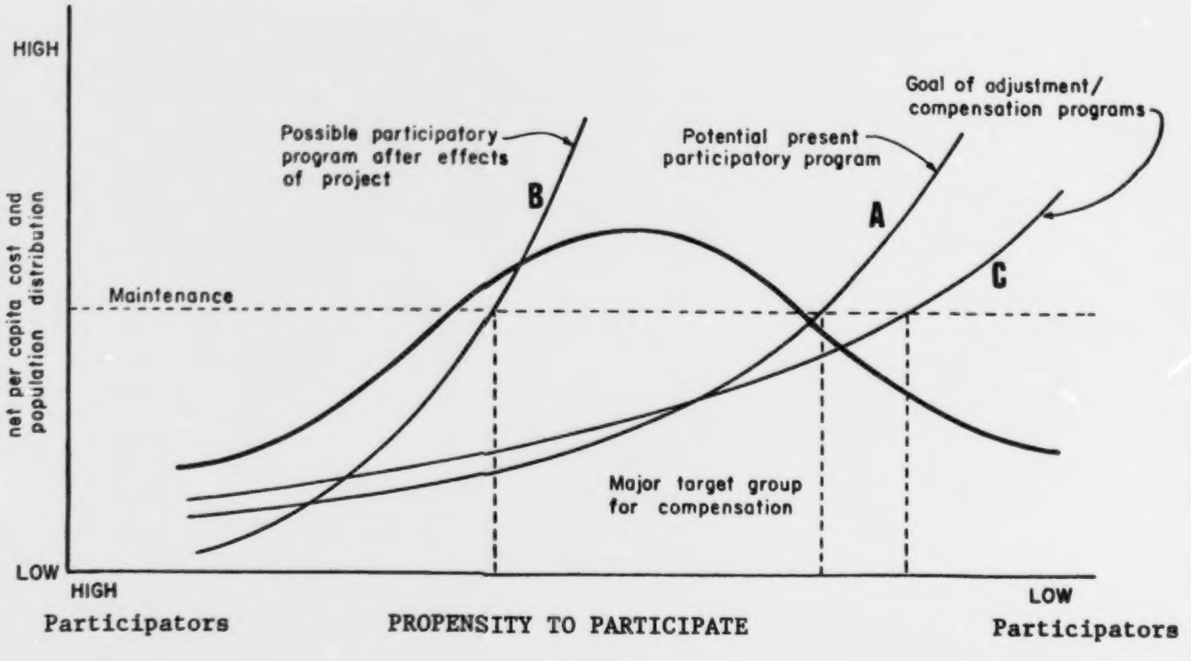


Figure 19a

increasing these choices in the longer run. Effects on fishing, trapping, docks, etc., are examples. Second, many standard programs that are not selective and flexible will cease to be of value in the short run, further limiting choice (e.g. a fisheries credit program is of little value if there are no fish to be caught, whereas an environmental corps program to assist in monitoring changes in the lake could be quite valuable).

These effects and the concept to deal with them are illustrated below.

GOVERNMENT EXPENDITURES AND LOCAL PARTICIPATION



Participators PROPENSITY TO PARTICIPATE Participators

Figure 19b

5. GOVERNMENT MEASURES

In this study, the government's role in aiding development is discussed in the context of a comprehensive employment strategy. The objective of such a strategy is to match the available employment opportunities with the needs of those seeking employment, and to accomplish this balance in such a way as to maintain the principle of freedom of choice between viable alternatives.

For each community, a prediction of the number and type of opportunities which will become available as a result of planned construction, ongoing government programs, etc., is compared with an assessment of the numbers and skills of those who will be seeking work over the next several years. The gap between them could be closed in a number of ways:

a) increase the resource base by instituting programs designed to make better use of existing resources or provide access to new resources,

b) encourage and assist the introduction of new resource-based processing industries, such as fish processing plants,

c) encourage and assist non-resource based industries, e.g., service industries,

d) provide improved infrastructure, such as new roads, etc., in order to increase the mobility and widen the options available to local residents,

e) provide training and orientation programs to facilitate appropriate local decisions regarding both individual employment and community ventures,

f) offer assistance to those residents who wish to move out of the community to areas of employment.

The measures recommended in this study are designed to take advantage of the opportunities and resources available in each community. A few examples of alternatives which could be considered at specific sites are outlined below.

Construction of a road linking South Bay to the community of South Indian Lake is one potential source of employment. In addition to providing jobs to South Indian Lake residents, it would be an opportunity to offer training programs in the operation of heavy equipment. Trained operators could, in turn, find employment in the mine at Ruttan Lake, so long as some means of transportation, such as a daily commuter bus, is made available.

Nelson House residents could be employed in timber clearing at Notigi if some effort is made to ensure that preference is given to local residents. In addition, there are opportunities for employment in the mine at Thompson, as well as in new service industries at Nelson House. In the long run, the experience would facilitate the attainment of marketable skills and increase the mobility of individual workers.

With the completion of construction at Jenpeg, an all weather road from Jenpeg to Cross Lake could provide that community with a continuing source of employment. As in the case of the South Indian Lake road, this could be used as a training ground for heavy equipment operators. The road would also provide access to employment in the Churchill Forest Industries cutting area at Sipiwesk.

In all communities affected by hydro development, workers could be placed in the resource management program which will be initiated by Manitoba Hydro. Also, programs to provide training, orientation and outmigration assistance could be offered generally.

A more detailed analysis of measures applicable to specific communities is presented in Chapter V.

E. ACTION ORIENTED RESEARCH

Each of the above principles are significant in terms of clarifying the issues associated with hydro development. It is even more important to have a concept of how the findings may be translated into prompt and effective action.

The approach taken in this study involved a firm commitment to make findings and recommendations available during the research stage, rather than to wait until the report writing stage. There is a significant advantage in adopting such an approach, in that early action can be taken on crucial issues. This is particularly true when the research stage roughly coincides with actual construction, as in the present case.

For a discussion of the actions resulting from this approach, see Chapter II, Background.

CHAPTER IV

SOCIAL AND ECONOMIC OVERVIEW

SOCIAL AND ECONOMIC OVERVIEW

A. GENERAL

Until recently, the remote communities of northern Manitoba have lived within their traditional framework in isolation from the remainder of Canadian society. This traditional society was characterized by an economy based on trapping, hunting and fishing. Because the lifestyle associated with such activities tended to be semi-migratory, the sophisticated community services and facilities characteristic of more sedentary societies were not required.

Within the past fifteen to twenty years, a general process of change has reduced this isolation and thrust the communities into a transition towards modernization. Some of the innovations which have had a significant impact on community lifestyle are: The Northern Affairs Act, with its implications for improved municipal services, including a community-council type local government; the adjacent industrial developments in mining and forestry; the development of new, modern towns; the increasing accessibility through winter roads, all-weather roads, air strips and scheduled air flights; and the increased level of government programs and services.

As the "north" and the "south" become more aware of each other, the disparities between them are recognized and the responsibilities of senior governments accentuated. The need for local services, such as housing, electricity, roads, air strips, safe water supply, sewage, garbage disposal, and education and health programs, is now apparent. More significantly, there is an increasing awareness of the urgent need for more employment opportunities and community responsibility in decision-making.

Further, there are indications that this area is beginning to develop a regional identity in an economic sense. Due to the increased pace of development over the past ten to fifteen years, a few communities are gradually becoming regional economic centers. This process has been facilitated by the expanding northern road system which links larger more economically viable communities like Thompson and Lynn Lake to smaller remote communities like Nelson House, as well as to southern Manitoba.

B. ROLE OF HYDRO

Within the context of transition, hydro development is a catalyst in that it causes the needs of northern communities to surface far more quickly than might otherwise have been the case.

Toffler (1970)[1] describes this state as the "dizzying disorientation brought on by the premature arrival of the future."

The accelerating rate of change has many implications. One dimension of this issue is that different effects occur at different stages in the development process. Another is that some effects are tangible, e.g., loss of physical resources, while others are intangible, e.g., changes in lifestyle.

1. IMPACT STAGES

(a) When the project is announced and prior to any development work, there are socio-psychological impacts arising from uncertainty regarding the impact of development.

(b) During the construction stage, the existence of nearby heavy construction activities suddenly removes the remoteness of the problem. Although new job opportunities develop, many necessary skills are not easily or quickly acquired by local residents. As a result, the jobs may go to outsiders. Those who fill these new jobs as well as those who observe them, develop an awareness of an economic system previously encountered only on a sporadic basis - a wage economy with many implications in terms of lifestyle, including more complex individual, family and community decision-making requirements. Local residents are exposed to the advantages of better facilities (including housing, sewer and water systems). This might affect aspirations not only of individuals but of communities. In addition, the fact that construction camps are predominantly male populated places tremendous stress on the female population of nearby settlements and, subsequently, on the entire community. Stress, in combination with improved access and increased incomes often leads to alcohol-based problems, as well as to various forms of social stratification and intercommunity tension. Rapidly increased recreation pressures (including hunting) can drastically reduce the supply of "bush" food available, thereby creating demand for expensive replacements.

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[1] Toffler, A., Future Shock, Bantam: New York, 1970.

(c) In the early stages of operation, short run, tangible, and visible effects become apparent. For example, docks might be flooded or lifted by ice, houses, sheds or fish stations inundated, traplines flooded or cleared, fish nets snagged or fowled by debris, etc. Such physical effects can, by and large, be anticipated and monitored. Other short term effects are less easily identifiable. For example, uncertainties in the minds of residents regarding the actual impact can create stress and social tensions that could become manifest in a variety of ways.

(d) Long term effects actually depend upon the net effects of changes in water levels and/or flows as compared with what the situation would have been without the change. Notwithstanding this simple logic, there will be many who will blame or try to blame all apparent downward trends on the hydro development, even if such trends would have occurred in any case. Critical factors over the long run are:

i) available and acceptable sources of livelihood, and

ii) community decision-making processes capable of handling changes, both predictable and unpredictable, during and following the establishment of a new water regime.

In addition to the more general catalytic effects discussed above, hydro development has affected and will continue to affect the important issues of employment and transportation in northern Manitoba.

1) Employment

The development of the hydroelectric potential of the Nelson River and the diversion of the Churchill River has made available large numbers of short term construction jobs to northern residents. Estimates of the number of jobs available up to 1982 are provided in Table 2. Beyond 1982, development of further sites on the Lower Nelson River is expected. However, no estimates of employment are available at present. It can be speculated that, given the nature of these future projects, levels of employment will continue at approximately those outlined in Table 2 (3,000 to 4,000 jobs annually) until about the year 2000. When these figures are combined with estimates of employment in the two other major sectors, mining and forestry, it appears that approximately 12,000 to 15,000 jobs will be available annually during this time period.[1]

Up to March, 1974, actual employment on the hydro project

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[1] Canada, Department of Manpower and Immigration files.

Table 2

ESTIMATE OF CONSTRUCTION WORKERS ON MANITOBA HYDRO'S MAJOR PROJECTS*

Prepared as of July, 1973

Maximum Employment Peaks During Summer Months

	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
Long Spruce	600	1700	2200	2200	2000	1550	475	250	-	-
Lake Winnipeg Regulation-Jenpeg Project	1200	1400	800	300	200	-	-	-	-	-
Churchill River Diversion	500	800	500	-	-	-	-	-	-	-
Others *	-	100	500	800	2000	2000	2000	2000	1500	2000
	2300	4000	4000	3100	4200	3550	2475	2250	1500	2000

* Source: Manitoba Hydro

has averaged approximately 375 local residents[1] and 825 other workers monthly on the Lake Winnipeg Regulation project. The Churchill River diversion has employed, on average, 140 local and 380 other workers each month.[2] These levels of employment have increased for both projects but, unfortunately, more recent figures are not available.

The implications to northern Manitoba of these actual and projected employment levels are significant. They appear to indicate that there is presently no job shortage problem in this area and that there is not likely to be one in the foreseeable future. However, the ability of northern residents to exploit such job opportunities is less clearcut. The discussions in Chapter V of individual remote communities suggest some specific methods of achieving this goal, but in addition, more general efforts will be necessary.

Further, the actual levels of employment have had a significant effect on the level of expenditures in this area.

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[1] Local residents have been defined in the relevant collective agreements as a person who has "...resided in census division sixteen (16) and census division nineteen (19), north of the Winnipeg River system, in Manitoba, for a period of five (5) years accumulative or more immediately prior to initial hiring."

[2] Averages are derived from data provided by Manitoba Hydro.

Increased income levels have led to more purchases of consumer goods and services, both in the remote communities and, to a greater extent, in centres such as Thompson. However, indications are that such expenditures result in a low multiplier effect since most retail services in this area are owned by outside interests.[1] This is particularly true of the remote communities.

Three general activities appear to be necessary:

i) planning,

ii) implementation of effective training programs, and

iii) modification of the work environment to facilitate local employment.

The planning function must identify future job opportunities and skill requirments and attempt to develop programs to meet such opportunities and requirements. It is essential that this program take place in consultation with local representatives. Otherwise, lack of local initiative may jeopardize the success of the process. The second function involves an effective and timely training program. A number of experimental programs, which have been implemented in the last few years by the Manitoba Department of Northern Affairs, have met with varying degrees of success. Most of these programs have attempted to integrate the third factor mentioned above, that is, a modified work environment. Recommendations and suggestions concerning modification of work environments and training are discussed in the various community analyses.

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[1] Unfortunately, no data was available to substantiate this discussion. However, personal communications with local retailers and other northern residents tend to confirm this conclusion.

Recommendation

> THAT the appropriate Federal and Provincial agencies develop, in consultation with local representatives, an employment strategy to explore the predicted job opportunities generated by hydro development for the maximum benefits of northern Manitoba residents.

2) Transportation

Hydro development has contributed to the acceleration of transportation facilities construction in northern Manitoba. Some new roads have been built specifically to facilitate hydro development. However, in many cases, decisions concerning the provision of transportation infrastructure resulted from a combination of general government northern development policy and specific resource development projects, e.g., mineral exploitation. The Jenpeg access road is an example of a road constructed to facilitate hydro development, while the Thompson to Leaf Rapids road falls into the general development category. Future road construction along the Lower Nelson can be expected to be, in part, a result of planned hydroelectric development.

The positive influence of this development on the provision of transportation facilities is, in general, advantageous to the communities under consideration in the study.[1] Reliable, all-weather road links to Cross Lake and South Indian Lake are now more feasible because of the closer proximity of new roads. In the case of Cross Lake, only twenty-five miles of road is left to be constructed to link it with the Jenpeg access road, while South Indian Lake is within seventeen miles of the all-weather road into the South Bay construction site. Nelson House now has a road link as a result of construction of the Thompson to Leaf Rapids road. In addition, the Thompson to Gillam road will link Split Lake with the rest of the northern region.

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[1] Details concerning community impacts are discussed in Chapter V. Also, much of the future development work mentioned here is under study as part of the Canada-Manitoba interim subsidiary agreement, Manitoba Northlands, signed in June, 1974.

These present and proposed actions have implications for the development of an employment strategy in this region (see previous discussion) and the cost of goods and services provided in these communities. The existence of all-weather road links can increase the mobility of the local labour force which will enable fuller exploitation of the job opportunities discussed earlier. In addition, road links will substantially reduce the costs of fuel, food and other commodities in these communities. The reliability inherent in all-weather roads could facilitate the uninterrupted supply of such basic community needs. Further, reliable access provides better prospects for the development of local tourism.[1]

In general, hydro development has had a positive impact on the development of transportation infrastructure in northern Manitoba. However, a number of actions must be taken to fully exploit these advantages.

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[1] A number of local tourism developments have been proposed, one of which is a motel complex in Cross Lake.

Recommendation

> THAT in consultation with local representatives, all-weather roads be constructed to link affected communities to the present road system as the need arises, and that job opportunities created by the development of transportation facilities be exploited to the maximum benefit of local residents.

2. INTANGIBLE IMPACTS

The tangible effects of hydroelectric developments are community specific and are therefore discussed in Chapter V, Community Impacts, and in Technical Reports #'s 5, 6, and 7. In the case of intangible impacts, there are three issues which apply to remote northern communities generally.

(a) Social Stress

The stress which accompanies rapid change is referred to throughout this report. For a more comprehensive analysis of the impact of stress on social systems, see Technical Report #1, Social Change and Stress: A Focus on Northern Development.

(b) Nutrition

Among the difficulties facing communities within the study area is the problem of maintaining adequate nutritional levels.

In the past, remote Manitoba communities relied heavily on land food such as meat, fish, and berries for their nutrient supply. Purchases of foods other than such staples as flour and salt were infrequent. With the transition from a gathering society to a partial wage economy, this pattern has been undergoing a change. Local residents have more money with which to buy a wider variety of foods, and less time and perhaps less inclination and incentive to hunt and fish. Under such circumstances, they tend to rely more and more on purchased foods. In the absence of adequate nutrition education, this shift in consumption patterns can have a serious effect on nutritional health, in that residents may consume less protein-rich land food and more "empty-calorie" foods like candy and soft drinks. Technical Report #3, The Impact of Development on Nutrition in Remote Northern Manitoba Communities, examines the present levels and expected changes in dietary patterns in remote northern Manitoba communities, with a view to recommending ways to maintain and, where necessary, to improve the nutrient intake of such communities.

(c) Cultural Changes

As communities move towards industrialization, residents become increasingly influenced by the conveniences and material goods associated with a different way of life. Gradually, social and cultural values are modified so as to approach those prevalent in industrialized societies. Second and third generation residents are thus apt to lose interest in the traditional rituals and artifacts which had been an integral and functional part of earlier community life. At some point, however, developing societies regret the loss of this link with their past and seek to preserve the remnants of a vanishing culture. The timeliness of this re-awakening interest in cultural roots is particularly significant, since valuable information will be lost when the pioneer generation dies out. In northern Manitoba communities, the number of older residents who have information which is crucial to the preservation of native culture is diminishing.

In this respect, as in other aspects of community life, hydro development is a significant factor, in that it accelerates the rate of cultural change. This could result in a serious loss to the communities concerned, to Indian culture as a whole, and to the Province generally.

Technical Report #2, A Northern Manitoba Native Cultural Centre or Museum: A Proposal, discusses the possibility of establishing a northern Manitoba museum and cultural centre for the purpose of preserving artifacts of native culture.

C. TRANSITIONAL STATUS OF CROSS LAKE, NELSON HOUSE AND SOUTH INDIAN LAKE

The transition from a traditional society to a wage economy is characterized by a number of changes, both social and economic. Since economic data is easier to quantify, a convenient yardstick of the degree of modernization achieved by a specific community is the percentage of income derived from various sources.

Table 3, p. 131, provides 1972-1973 income data for three communities which will be affected by the hydro developments - Cross Lake, Nelson House and South Indian Lake. On the basis of these figures, it may be concluded that the communities have much

Table 3

INCOME SOURCES FOR SELECTED AFFECTED COMMUNITIES, 1972-1973*

Community	TRADITIONAL ECONOMY		Wage Economy	Transfer Payment Economy	Total
	Cash	Income-in-Kind			
Cross Lake	$63,000 (3%)	$254,000 (12%)	$1,210,000 (55%)	$667,000 (30%)	$2,194,000
Nelson House	28,300 (2%)	148,700 (12%)	744,200 (58%)	358,000 (28%)	1,279,200
South Indian Lake	96,600 (17%)	108,000 (20%)	189,000 (35%)	148,200 (28%)	538,800

*Source: See detailed discussions of each community for sources and methods of derivation of figures.

less dependence on traditional pursuits than had formerly been believed. It will likely surprise residents of Cross Lake and Nelson House to learn that only 15% and 14% of their income, respectively, is derived from the traditional sector. Even in the case of South Indian Lake, the wage economy accounts for almost as much income as the traditional economy (35% and compared with 37%). This evidence of a marked trend towards modernization must be given consideration in any future development plans.

D. COMMUNITY ANALYSES

Although these communities are similar in many ways, there are significant differences between them. An obvious disparity, as shown in Table 3, is the greater dependence of South Indian Lake on traditional income sources. There are also some major distinctions between the types of wage employment in Cross Lake and those prevalent in Nelson House. Although these differences are not reflected in Table 3, examination of the data provided in the community analyses, Chapter V, substantiates this point.

In addition, and related to these differences in economic factors, there are significant inter-community variations in value systems, leadership structures, decision-making processes, etc.

The discussion in Chapter V and in Technical Reports #'s 5 through 7 deals with each of these communities in detail with a view to:

a) identifying community specific impacts and opportunities associated with the hydro development, and

b) recommending mitigation and/or compensation measures.

The differences between these communities must be recognized in order to avoid the dangers of over-generalization of problems and its corollary, application of inappropriate solutions to specific local issues.

CHAPTER V

COMMUNITY IMPACTS

A. CROSS LAKE

COMMUNITY IMPACTS

Until the 1950's, remote northern Manitoba communities had few ties with the provincial economy and cultures. The main contacts of community members were with residents of other remote communities in the surrounding area. Since all such residents depended for their livelihood upon harvesting the products of forests and rivers, the attitudes, values and activities which evolved were appropriate to the lifestyle of a "gathering society."

In recent years both the methods of earning a livelihood and the attitudes and values of residents have been undergoing changes. The expanding need for power, recreation, etc., has caused industrialized communities to encroach upon the land resources available to remote communities. In addition, younger native residents are reluctant to submit to the long hours and hard work associated with traditional pursuits, so long as alternative employment opportunities are available. As a result, these communities have been moving away from a lifestyle dictated by the requirements of fishing, hunting, and trapping. It is expected that the hydro power project will accelerate the rate of change through its effect on both the physical resource base and the employment opportunities available to local residents.

The following description of current economic and social structures provides a baseline against which to assess the impact of the project on these communities. The description highlights the more important characteristics of these communities. For more detailed information, it is suggested that Technical Reports 5, 6 and 7 (community profiles on Cross Lake, Nelson House and South Indian Lake, which accompany this study) be consulted.

1. INTRODUCTION

(a) Location

The community of Cross Lake is located at the southeast corner of Cross Lake. It is approximately 77 miles south of Thompson, 45 miles north of Norway House and 39 miles southeast of Wabowden. The populated areas, which are scattered throughout Indian Reserve #19 and adjacent Crown Lands, extend for about 6 miles along the east shore and 4 miles along the west shore of the Nelson River at Cross Lake (see Figures 20 and 21, pp. 138 and 139).

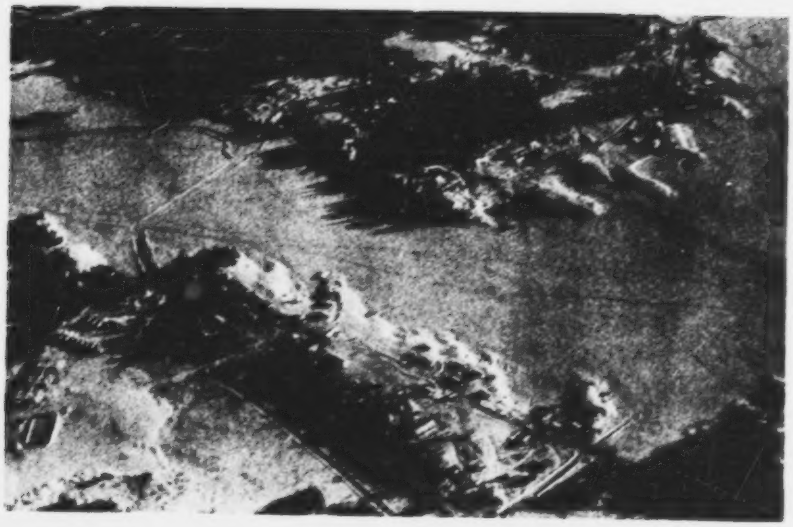
The population of Cross Lake is approximately 2,000 of which about 1,700 are of treaty status.

(b) The Water Regime

(1) The Unregulated Condition

Levels

Under unregulated conditions on Cross Lake, the average annual mean monthly level is expected to be 678.54 ASL (above sea level). This level will



Cross Lake

Cross Lake - note ice travel patterns

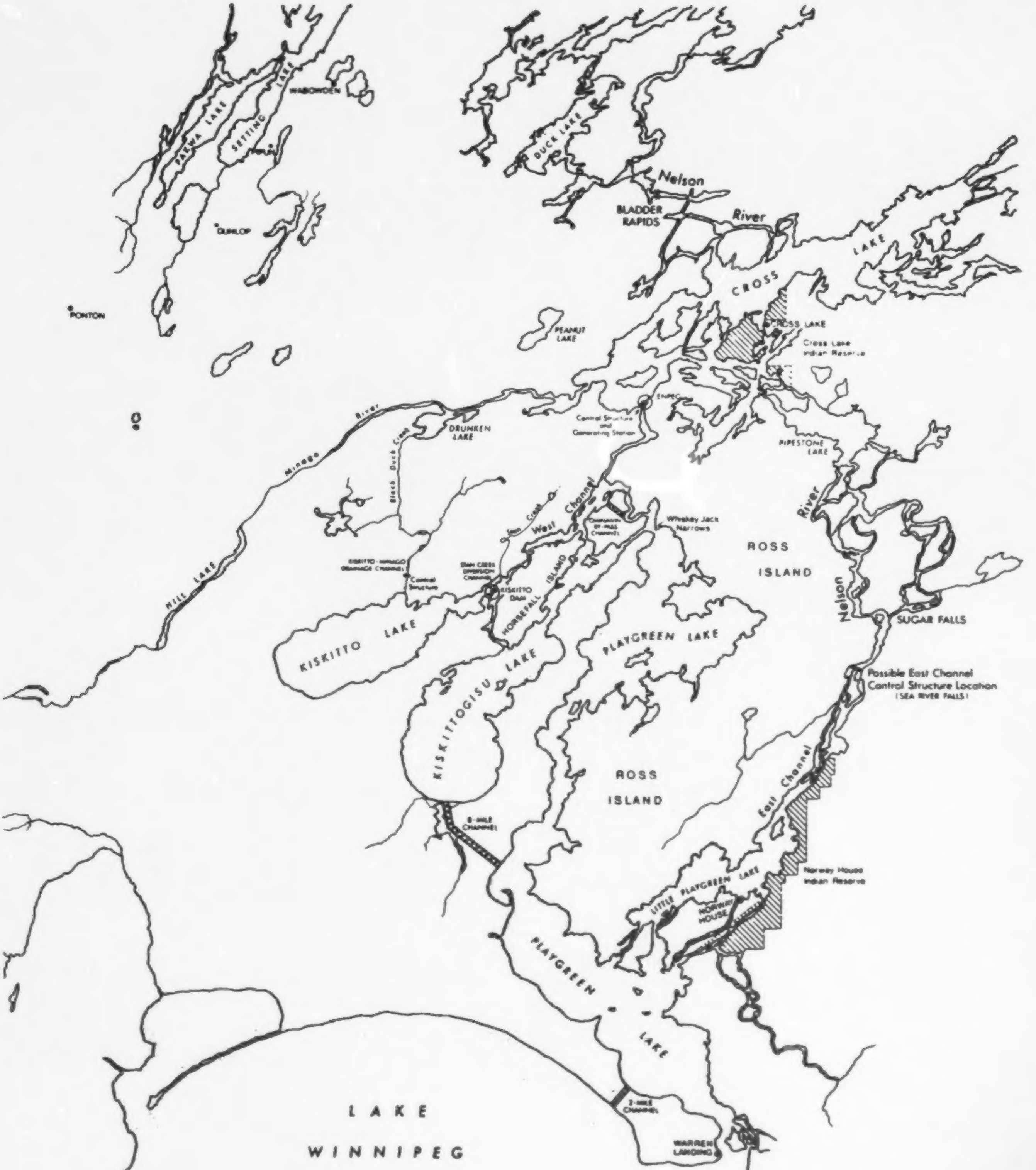

PAKWA LAKE
SETTING LAKE
WABOWDEN
DUNLOP
PONTON
DUCK LAKE
Nelson River
BLADDER RAPIDS
CROSS LAKE
PEANUT LAKE
CROSS LAKE
Cross Lake Indian Reserve
ENPEC
Control Structure and Generating Station
PIPESTONE LAKE
Minago River
DRUNKEN LAKE
Black Duck Creek
West Channel
Whiskey Jack Narrows
KISKITTO-MINAGO DRAINAGE CHANNEL
Control Structure
KISKITTO DAM
HORSEFALL ISLAND
ROSS ISLAND
Nelson River
SUGAR FALLS
KISKITTO LAKE
PLAYGREEN LAKE
Possible East Channel Control Structure Location (SEA RIVER FALLS)
KISKITTOGISU LAKE
ROSS ISLAND
East Channel
8-MILE CHANNEL
Norway House Indian Reserve
LITTLE PLAYGREEN LAKE
NORWAY HOUSE
PLAYGREEN LAKE
2-MILE CHANNEL
LAKE WINNIPEG
WARREN LANDING

Figure 20 THE OUTLET LAKES

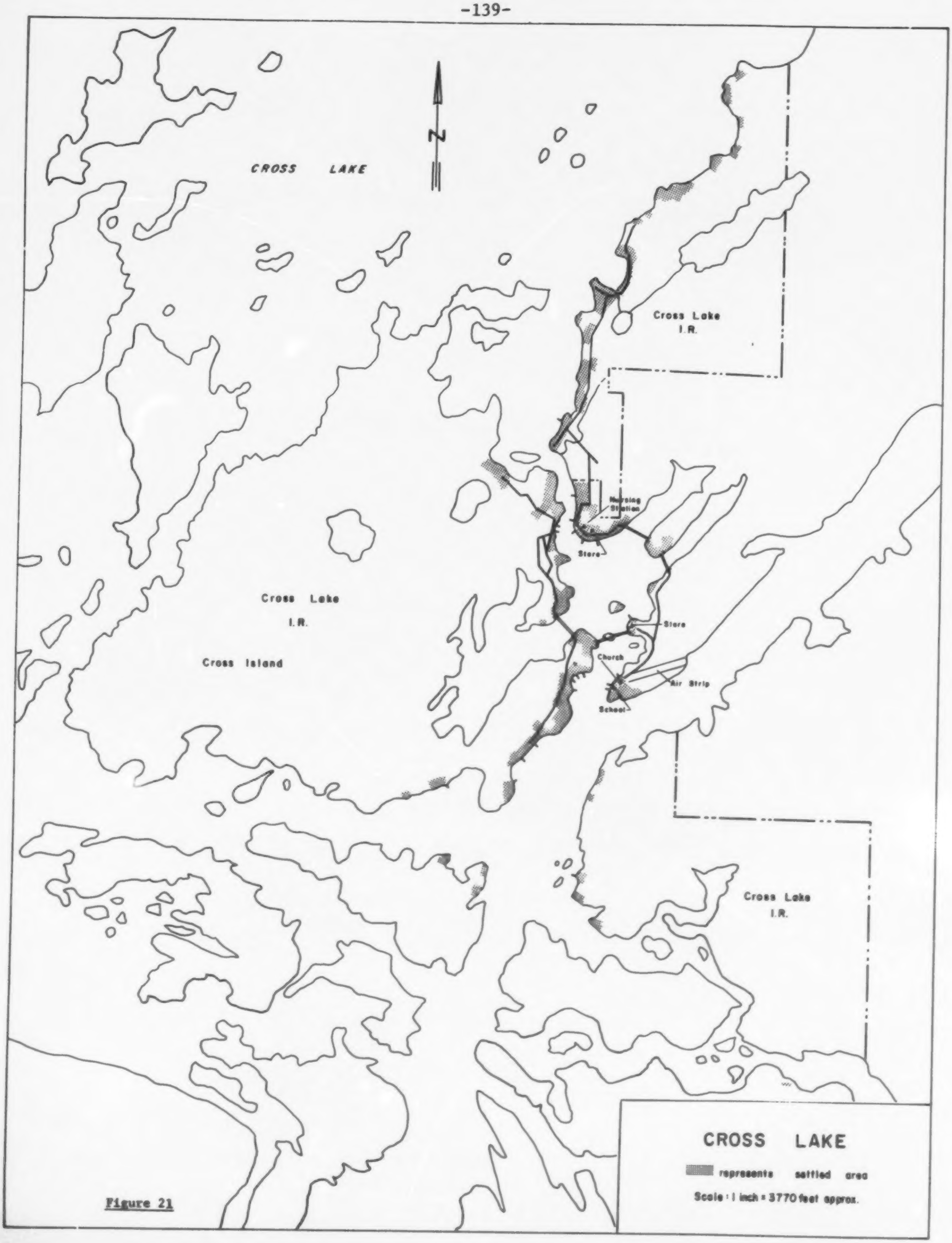
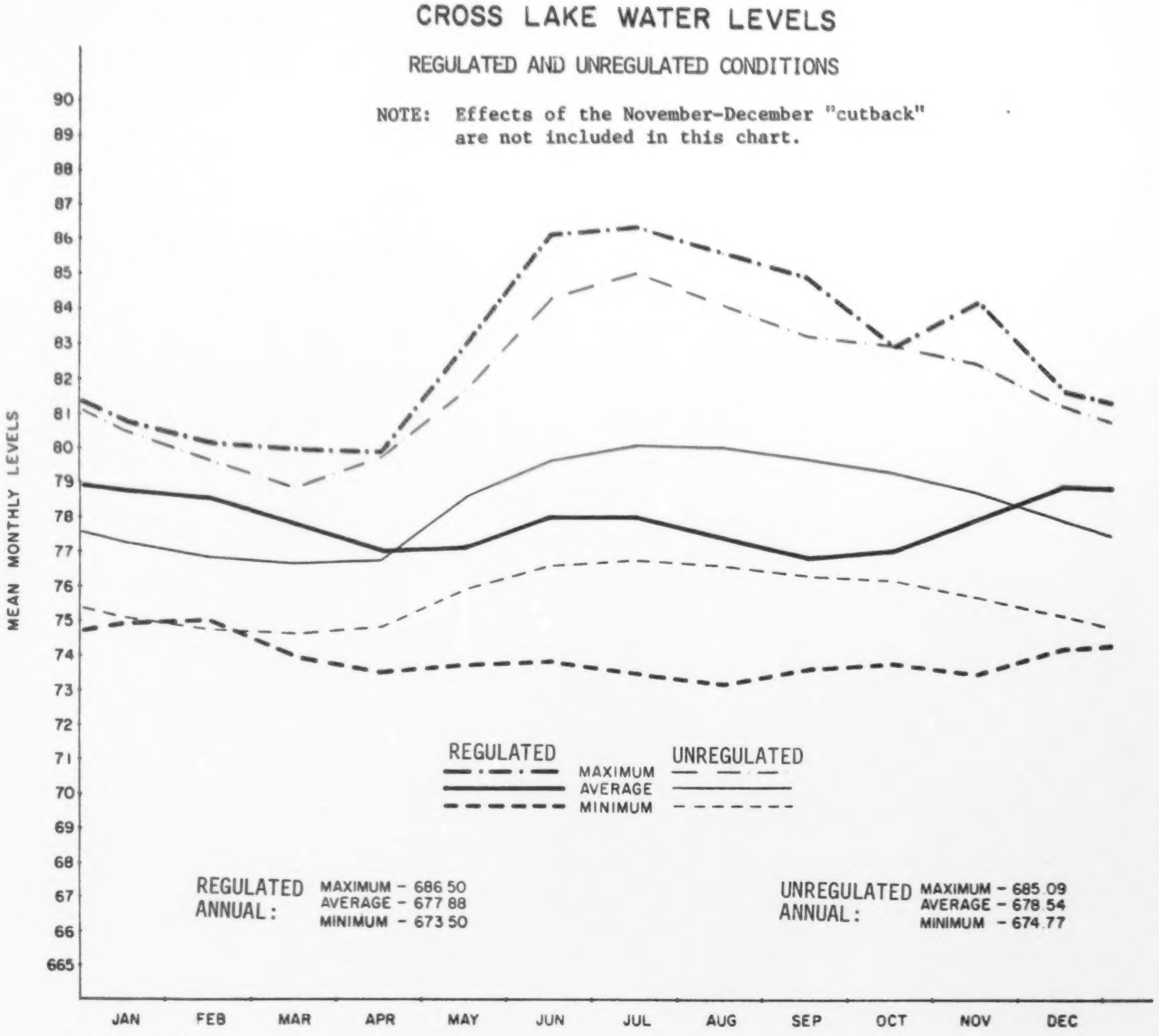

CROSS LAKE
N
Cross Lake I.R.
Nursing Station
Store
Cross Lake I.R.
Store
Church
Air Strip
School
Cross Island
Cross Lake I.R.
CROSS LAKE
▨ represents settled area
Scale : 1 inch = 3770 feet approx.

Figure 21

vary from a low of 674.77 feet ASL to 685.09 feet ASL. Generally, water levels will be lowest during the months of February, March and April and highest during the summer months of July and August (see Figure 22, p. 141).

Flows

Flows will vary substantially under unregulated conditions. The average annual flow of the Nelson River into Cross Lake will be approximately 72,700 cfs (cubic feet per second) of which about 80% will be routed through the West Channel and 20% through the East Channel. The flows will vary significantly over the year. On the East Channel, the average winter flow will be approximately 8,300 cfs, while in summer, the flow will average 15,500 cfs. The West Channel will vary from an average winter flow of about 52,000 cfs to an average summer flow of 77,500 cfs.



CROSS LAKE WATER LEVELS

REGULATED AND UNREGULATED CONDITIONS

NOTE: Effects of the November-December "cutback" are not included in this chart.

Figure 22

(2) The Regulated Condition

Levels

Under regulation, the Jenpeg control structure has been licenced to maintain water levels on Lake Winnipeg between 711 to 715 feet. Further, Manitoba Hydro's operating licence stipulates a minimum flow from Lake Winnipeg of 25,000 cfs. The effect of regulation on Cross Lake water levels and flows will generally be a reversal of the natural annual water level fluctuations. The average regulated mean monthly level will be about 677.88 feet ASL, while the minimum level will be approximately 673.40 feet ASL and the maximum 686.50 feet ASL. Figure 22 indicates that under regulation winter levels will generally be 1 to 1½ feet higher than under regulated conditions, while summer levels will be about 1½ to 2½ feet lower.

Flows

Flows will be increased substantially under regulation. On the West Channel, the average winter flow under regulation will be approximately 80,000 cfs, while average summer flows will be approximately

50,000 cfs. A maximum allowable day to day fluctuation of 15,000 cfs is specified in Hydro's licence. However, there will be substantial fluctuations in the months of November and December as a result of Manitoba Hydro's operational plans. These plans are discussed in detail below. A similar situation is expected to exist for the East Channel. The summer average flow will be about 18,200 cfs under regulation, as opposed to 15,500 cfs without regulation. Winter flows are expected to average 10,900 cfs with regulation, compared with 8,300 cfs under unregulated conditions.

(3) The Cutback

As mentioned above, there will be major deviations from Manitoba Hydro's normal operating procedures during the months of November and December. In order to allow a smooth ice cover to form upstream of Jenpeg, Manitoba Hydro plans to reduce the flow at Jenpeg to about 50,000 cfs during freeze-up. This is expected to occur some time during the month of November. The cutback will last for approximately two to three weeks and in most years will result in an average drop of between 2½ and 3½ feet in Cross Lake water levels. The maximum drop in water levels is estimated to be 4 to 5 feet. After ice formation, it is planned to gradually increase flows through Jenpeg until normal regulated levels are achieved toward the end of December. This increase will result in a rise in water levels on Cross Lake to levels achieved before cutback or higher. It should be noted that the changes in levels resulting from the cutback are not represented in Figure 22.

2. THE ECONOMY

In 1972/73, the total community income was $2,194,000, while average income per person in the labour force was $3,942.[1] Tables 4 and 5 present community income in two different but related ways; by economic activity and by type of economy. Economic activities include fishing, trapping, hunting, the resource development sector, service industries and the government sector. Three types of economies were identified: the traditional economy, the wage economy, and the transfer payment economy. The combination of these economic activities and types of economies in part describes the lifestyle of the community.

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[1] This excludes income to transient residents such as teachers, nurses, etc.

The economic activity of fishing provided $175,000 or 8% of community income, trapping $42,000 or 2%, hunting $100,000 or 5%, resource development $650,000 or 30%, government $1,063,000 or 48% and service industries $164,000 or 7%. Government activities are subdivided into wages - $396,000 or 18% - and transfer payments $667,000 or 30%. It should be noted that in the resource development sector, wages generated as a result of Manitoba Hydro's development were approximately $634,000 or 29% of total community income.

When community income is considered from the point of view of types of economies, the traditional economy accounts for $317,000 or 15% of total community income, the wage economy generates $1,210,000 or 55% and the transfer payment economy $667,000 or 30%. This indicates that from an economic viewpoint Cross Lake is a community that is approaching full integration

Table 4

ESTIMATED INCOMES DERIVED FROM ALL SOURCES: CROSS LAKE, 1972/73*

Income Source	Traditional Economy		Wage Economy	Transfer Payment Economy	Total
	$ Cash	Income In Kind			
Fishing	44,000	131,000	-	-	175,000
Trapping	19,000	23,000	-	-	42,000
Hunting	-	100,000	-	-	100,000
Resource Development	-	-	650,000	-	650,000
i) Forestry	-	-	16,000	-	-
ii) Hydro Development	-	-	634,000	-	-
Government	-	-	396,000	667,000	1,063,000
Service Industries	-	-	164,000	-	164,000
TOTAL	$63,000	$254,000	$1,210,000	$667,000	$2,194,000

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*For sources see detailed tables concerning each economic activity.

Table 5

PERCENTAGE OF INCOMES DERIVED FROM ALL SOURCES: CROSS LAKE, 1972/73*

Income Source	Traditional Economy		Wage Economy	Transfer Payment Economy	Total
	$ Cash	Income In Kind			
Fishing	2%	6%	-	-	8%
Trapping	1%	1%	-	-	2%
Hunting	-	5%	-	-	5%
Resource Development	-	-	30%	-	30%
i) Forestry	-	-	1%	-	-
ii) Hydro Development	-	-	29%	-	-
Government	-	-	18%	30%	48%
Service Industries	-	-	7%	-	7%
TOTAL	3%	12%	55%	30%	100%

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*For sources see detailed tables concerning each economic activity.

with the larger provincial economy. By comparison, South Indian Lake's economy has been described as 37% traditional, 35% wage and 28% transfer payment economy.[1]

The impact of this development on Cross Lake must be viewed from two different time perspectives. In the short term, i.e., during the construction period, the development has had a major positive impact on the levels of income and temporary employment in the community. Tables 4 and 5 and the more detailed discussion under the section on "Wage Employment" describes the nature and magnitude of this impact. Twenty-nine percent of total community income was derived from employment on the Manitoba Hydro development. In addition, external transportation has been improved by the provision of an access road to the Jenpeg construction site. This has brought an all-weather road link to within 25 miles of the community. In the longer term, i.e., after the construction period, the impact on the community will likely be negative. Ongoing income losses are expected to accrue to trapping and possibly fishing activities. There will be some real property damage in the community and there is a possibility, as yet undefined, of disruption of both internal and external transportation. Perhaps the most critical effect will occur in the employment sector. The disappearance of the large number of temporary jobs created could lead to a substantial drop in community income. Further, unless programs are generated to ensure more employment in this area, the level of transfer payments into the community can be expected to rise dramatically, giving rise to a number of associated socio-economic problems.

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[1] Preliminary Report, Social & Economic Impact of the Nelson River Hydro Development, (With Emphasis on South Indian Lake), Manitoba Department of Northern Affairs, June, 1973.

(a) Labour Force

As mentioned earlier, the population of Cross Lake is approximately 2,000. The age distribution of this population consists of 1,060 people under the age of 16, 870 between 16 and 65, and 79 persons over 65 years. Labour force was estimated from these figures to be approximately 548.[1] Table 6 provides details concerning the labour force.

The labour force can be generally categorized by skills.[2]

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[1] Labour force was defined as all persons between the age of 16 and 65 who were not attending school full time. Further, married women, unwed mothers and separated women with children were not included.

[2] Information was derived from Canada Department of Indian and Northern Affairs and Manitoba Department of Northern Affairs files.

Table 6

LABOUR FORCE - CROSS LAKE, 1972*

Age Group	Male	Female	Total
16 - 20	61	27	88
20 - 40	250	60	310
40 - 65	140	10	150
TOTAL	451	97	548

*Source: Canada, Department of Indian & Northern Affairs.
Manitoba, Department of Northern Affairs.

Approximately 5% are qualified tradesmen, professionals or persons with management experience. Semi-skilled persons, mostly in construction trades, account for a further 22%, while 55% are classified as unskilled. In addition, 18% have been classified as fishermen or trappers with no other occupation.

Education levels are lower than the provincial average. Those under 30 years of age and no longer attending school have an average level of formal education of grade 7 or 8. Persons between 30 and 45 average at approximately grade 6, while those over 40 have lower levels of formal education.[1] It should be noted that within the context of the local economy and the perceived needs of this community, the validity of this type of education can be questioned. In addition, high school upgrading courses and vocational training courses are offered on an ongoing basis by both federal and provincial agencies.

The mobility of this labour force is difficult to determine. One factor which impedes the incentive to leave the community to take either temporary or permanent employment elsewhere is language. Approximately 25 members of the labour force over 40 years old do not speak English and, therefore, are unsuitable for employment outside the reserve.[2] However, more formal education has eliminated this constraint among younger age groups. Further constraints to mobility exist in the strong family ties prevalent in Cross Lake, as well as the acknowledged constraints of inadequate education and skills relative to provincial standards. In addition, the lack of transportation facilities in and out of the community impedes mobility, particularly in the case of temporary and commuting types of employment. There is no all-weather road link to Cross Lake and, hence, it becomes more costly and less convenient for residents to leave the community to find employment.

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[1] Information was derived from the Manitoba Department of Northern Affairs and the Canada Department of Indian & Northern Affairs.

[2] Information was derived from Manitoba Human Resources Survey, Department of Indian & Northern Affairs, 1972.

Attitudes to work in general and to leaving the community to find employment in particular, are major factors in considering this issue. An attempt was made to establish these attitudes through an examination of the past work history of the community and through a series of interviews with local residents. Examination of historic employment data for this community indicates that there is a relatively strong tendency to enter the wage economy and to leave the community temporarily to find employment.[1] The interviews conducted by members of the Social and Economic Impact Study Team indicate that there is an awareness that jobs are scarce in Cross Lake and that more opportunities exist outside the community. The two discernible motivating factors involved in this issue appeared to be the promise of better, more permanent employment and the wider variety of future opportunities which may be available to the children. Approximately 60% of respondents indicated that they would be willing to move to better employment.

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[1] Information was derived from a number of sources, the most important of which were Manitoba Department of Northern Affairs, Mines, Resources & Environmental Management and Canada Department of Indian & Northern Affairs.

In summary, Cross Lake possesses a large labour force in comparison with other remote northern communities. The level of formal education and technical training is low relative to southern standards but there appears to be a willingness to enter the wage economy even if this requires moving out of the community for extended periods of time.

(b) The Traditional Economy

(1) Trapping

Trapping in Cross Lake presently represents approximately 2% of the community's annual income.[1] From 1967/68 to 1972/73, the average annual total value of fur was $46,400 and the average annual net income to trappers was $18,600. In addition, approximately $23,000 of annual income-in-kind was generated by this activity. The average annual number of trappers involved in the industry was 151. Table 7 details these findings.

The net value or net income to Cross Lake trappers is 40% of total value. The remaining 60% of total value can be charged against royalty charges, auction fees, shipping, handling and marketing costs and trapper production costs.

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[1] See Technical Report #5, Cross Lake Community Profile, for details concerning the history and general structure of this local industry.

Table 7

VALUE OF FUR HARVEST & NUMBER OF TRAPPERS - CROSS LAKE, 1967/68 TO 1972/73

Year	Total Value*	Net Value**	Number of Trappers
1967/68	$43,300	$17,300	189
1968/69	81,300	32,500	199
1969/70	56,300	22,500	148
1970/71	29,900	11,900	122
1971/72	41,200	16,500	129
1972/73	26,400	10,600	120
AVERAGE	$46,400	$18,600	151

Source: Manitoba Department of Mines, Resources & Environmental Management.

* Total values are market value f.o.b. Winnipeg obtained from Manitoba Department of Mines, Resources & Environmental Management records.

** Net income to the trapper after production and marketing costs.

Production varies substantially from year to year but on average the most important specie trapped is beaver with mink, lynx, and muskrat following in decreasing order of importance. Table 8 details the value of the fur harvest by specie. Beaver accounts for approximately one-third of the total harvest value. This specie and muskrat are water based and will be directly affected by the

Table 8

VALUE OF FUR HARVEST BY SPECIE CROSS LAKE 1967/68 TO 1972/73

Year	$ Beaver	$ Muskrat	$ Mink	$ Lynx	$ Other	$ Total Value	$ Net Income
1967/68	16,488.00	5,754.00	18,528.00	326.00	2,154.00	43,250.00	17,300.00
% of Total	38%	13%	43%	1%	5%		
1968/69	23,034.00	5,735.00	39,984.00	9,453.00	7,138.00	81,344.00	32,500.00
% of Total	28%	7%	49%	7%	9%		
1969/70	20,881.00	3,445.00	12,649.00	13,710.00	5,617.00	56,302.00	22,500.00
% of Total	37%	7%	22%	24%	10%		
1970/71	9,510.00	10,616.00	828.00	6,047.00	2,875.00	29,876.00	11,900.00
% of Total	32%	36%	2%	20%	10%		
1971/72	14,307.00	4,371.00	4,617.00	12,579.00	5,302.00	41,164.00	16,500.00
% of Total	35%	10%	11%	31%	13%		
1972/73	9,283.00	1,679.00	6,552.00	2,073.00	6,791.00	26,378.00	10,600.00
% of Total	35%	6%	25%	8%	26%		
AVERAGE	15,584.00	5,267.00	13,859.00	6,698.00	4,979.00	46,385.00	18,550.00
% OF TOTAL	34%	11%	30%	14%	11%		

SOURCE: Manitoba Department of Mines, Resources and Environmental Management

change in the Cross Lake water regime. Also mink extensively feed on muskrat.

The relationship between recent fur production and "potential" fur production should be mentioned. "Potential" fur production is taken to be the average number of animals harvested in the six peak production years on record, valued at the 1967-73 average prices.[1] Comparisons were made between the average actual value of fur harvested since 1967/68 and the derived potential. These comparisons indicated that recent trapping production is approximately 40% of what the historic potential suggests it could be. However, if muskrats are excluded from the calculation on the grounds that low prices relative to other species have gradually resulted in decreasing harvests, the estimates indicate that Cross Lake is trapping at about 66% of its historic potential.

Earlier, changes in the water regime of Cross Lake and adjacent waterbodies were discussed in detail. The implications of these changes for trapping in this area are significant. Two factors should be noted. The first is that water levels with regulation will generally be the reverse of the situation without regulation. The rise in levels in the fall is the most significant change in this respect. Secondly, the cutback during freeze-up will have a significant impact. Sudden fluctuations in levels of from 2 to 5 feet will cause major disruptions among the beaver and muskrat populations and to a certain degree affect the mink population.[1] Further, since the magnitude of the cutback will be erratic depending upon climatic conditions in the area during freeze-up and the water regime for that particular year, it will not be possible for these species to re-establish themselves on a permanent basis after a period of adjustment to the new regime. This last statement is, perhaps, the most relevant since it implies that losses to trapping in this area will be on-going until such time as Cross Lake water level fluctuations are moderated through regulation of its outflows.[2]

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[1] The potential fur production figures are shown in Technical Report #5, Cross Lake Community Profile.

There are 25 Cross Lake registered traplines located in the area to be affected (See Figure 23). Table 9 outlines the value of the fur harvest and number of trappers utilizing these areas.

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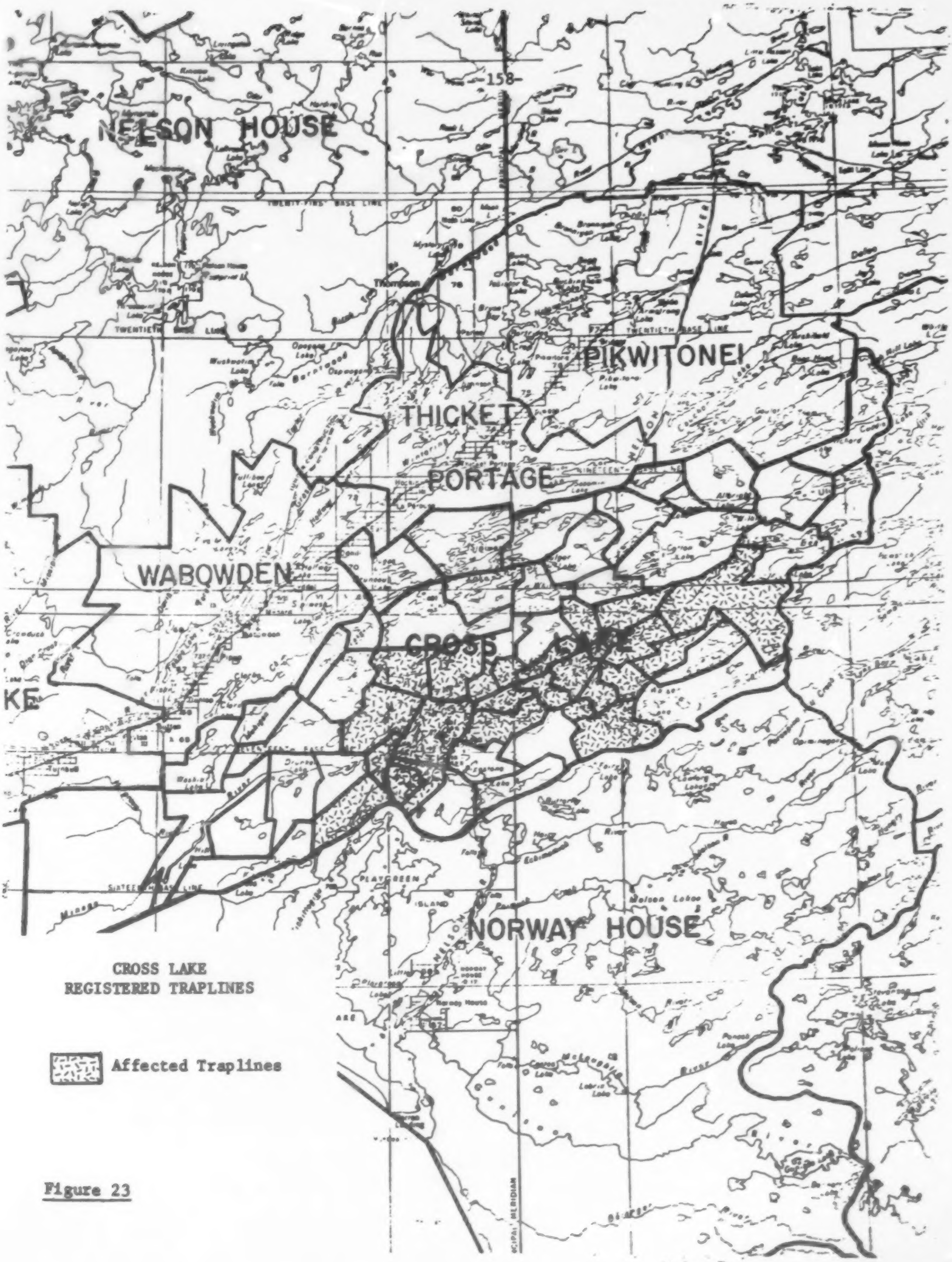
[1] F. F. Slaney & Company Ltd., Wildlife Resource Impact Assessment, Outlet Lakes Area, March, 1973, Lake Winnipeg, Churchill and Nelson Rivers Study Board.

[2] Manitoba Hydro's present plans state that a control structure and generating station is scheduled to be developed at Bladder Rapids in approximately 20 years. Therefore, it appears that this regime will prevail for at least this time period. It should be noted that alternative developments at Whitemud Falls and Redrock Rapids are also being considered. See Figure 20 for locations.


NELSON HOUSE
158
TWENTY-FIRST BASE LINE
TWENTIETH BASE LINE
PIKWITONEI
THICKET
PORTAGE
WABOWDEN
CROSS LAKE
KE
SIXTEENTH BASE LINE
PLAYGREEN
NORWAY HOUSE
▨ Affected Traplines

CROSS LAKE
REGISTERED TRAPLINES

Figure 23

Table 9

VALUE OF FUR HARVEST & NUMBER OF TRAPPERS: POSSIBLE AREA AFFECTED - CROSS LAKE, 1967/68 TO 1972/73*

Year	Total Value	Number of Trappers	Net Income
1967/68	$ 5,645	86	$ 2,258
1968/69	28,142	102	11,257
1969/70	14,783	100	5,913
1970/71	11,097	61	4,439
1971/72	14,381	73	5,752
1972/73	11,468	58	4,587
AVERAGE	$14,252	80	$5,701

*Source: Manitoba Department of Mines, Resources & Environmental Management.

These figures represent approximately one-third of the value of the fur harvest since 1967/68 and about 50% of Cross Lake trappers have regularly utilized these traplines. The community trapline (Registered Trapline #56 on Figure 23) is included in this area. In this case, the use of income to indicate magnitude of impact is less applicable. This line is generally used as a training ground for young people and an area where older residents can continue to trap as a recreational activity. Further, personal communications with local residents indicate that a large percentage of the land food attributable to trapping comes from this line. Hence, the impact to this area must be assessed within the context of disruption of a traditional lifestyle for the older residents and loss of trapper training opportunities for young residents.

Beaver and muskrat production have accounted for approximately 45% of the value of production in this area with mink accounting for another 30%. It is felt that there will be some re-establishment of beaver and muskrat after the initial disruption. However, due to the periodic nature of the "cutback" described earlier, production will be well below current levels. Mink will be less affected but there will be some long-term reductions because of the decrease in one of its main food sources, muskrat.[1] On the basis of this and other information,[2] the following impacts can be postulated. Beaver and muskrat production will be reduced by an average of 50% of the affected area's average historic potential production. It can be expected that production levels will vary substantially in the short run, particularly if the "cutback" occurs frequently. Mink production will be reduced by an average of 25% of the affected area's average historic potential production. Again, substantial variations in production can be expected.

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[1] _Op. cit._, F. F. Slaney & Company Ltd.

[2] Personal communications with field officers of the Manitoba Department of Mines, Resources & Environmental Management and Cross Lake trappers.

The more detailed discussion contained in Technical Report #5 appears to indicate that trapper effort will not increase to compensate for these losses in potential production. Further, access to the affected areas could be partially disrupted due to poor ice conditions on Cross Lake caused by the operation of the Jenpeg control structure. Therefore, trapper productivity could be reduced to a level below that which has existed recently. In this case, it can be expected that actual fur harvests will fall by at least as much as the anticipated percentage reductions in average historical peak production levels.

Projection of these estimated production losses into data on the value of harvest and net income to trappers, indicates a possible annual reduction in value of the fur harvest of $9,280 and net income to trappers of approximately $3,720. It should be noted that the above estimates are conservative, since future price increases are not considered. Personal communications with officers of the Department of Indian and Northern Affairs and the Hudson Bay Company have indicated that fur prices can be expected to remain relatively high, and become more stable in the future. However, for the purpose of specifying the relative magnitude of trapping impact, the estimates are adequate.

The impact on income-in-kind can be expected to be at least as much as the decrease in the net cash income derived from trapping. This would result in a further annual loss of approximately $4,600 in community income.

The above analysis indicates that there will probably be substantial negative impacts on trapping in the Cross Lake area from the viewpoint of both potential and actual production.

Recommendations

1. THAT trapper real property losses (traps, cabins, etc.) be replaced or equivalent cash payments made.

2. THAT provision be made for equivalent alternatives and/or compensation to affected trappers for loss of income, including income in kind.

Alternatives which can be considered under this recommendation are:

a) an acceleration of the Department of Mines, Resources and Environmental Management fur program (see Technical Report #5 for details),

b) provision of alternative community recreational facilities to replace those which may be lost due to disruption of the community trapline,

c) the acceleration of job training programs to provide opportunities for those residents who stop trapping due to development related impacts, and

d) relocation of trappers to areas not affected by hydro development.

(2) Fishing

The Cross Lake fishery provides 8% of the total community income when income-in-kind is added to profits and wages. It ranks third as a source of income to the community.[1]

In 1973, the fishery provided approximately $43,900 in net income to 21 fishing operators. In addition, the fishery provided $131,000 in income-in-kind from the use of fish for domestic purposes. A very small amount of cash income was also derived from the sale of fish to local residents. A summary of community income from commercial fishing is given in Table 10.

There is a reasonable probability that, with the advent of the Cross Lake Fishermen's Co-operative in late 1973, more employment and income will be generated in the future. Plans are underway for improved packing and local shipping facilities. Also, it is expected that the Co-op will employ a total of six local residents in the near future.[2]

Earlier, a detailed description of changes to the Cross Lake water regime resulting from the Lake Winnipeg regulation project was presented. The negative impact of these changes on

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[1] For more details concerning the fishery, see Technical Report #5, Cross Lake Community Profile.

[2] News Release, "11 New Co-operatives Incorporated This Year", Information Services Branch, Manitoba Government, September 28, 1973.

Table 10

COMMUNITY INCOME FROM COMMERCIAL FISHING & NUMBER OF FISHERMEN - CROSS LAKE, 1969 - 1972*

Year	Net Income to Fishermen	Number of Fishermen
1969	$14,900	23
1970	45,500	22
1971	33,400	16
1972	13,400	12
1973	43,900	21
AVERAGE	$30,200	19

*Source: Freshwater Fish Marketing Corporation and Manitoba Department of Mines, Resources & Environmental Management.

Cross Lake fish productivity is not expected to be substantial.[1] Productivity of most major species (whitefish, walleye, pike and goldeye) is expected to increase with higher winter levels and decrease with lower summer levels. On balance, the impact is likely to be relatively minor. The sturgeon fishery may experience some disruption but past experience at earlier hydroelectric projects

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[1] A more detailed discussion of fisheries limnology impacts in the Cross Lake area is contained in the Fisheries Limnology, Outlet Lakes Area, March, 1973 prepared for the Lake Winnipeg, Churchill and Nelson Rivers Study Board, Winnipeg, Manitoba.

(e.g., Winnipeg River Development) have indicated that the specie may re-establish in the Jenpeg tailrace. Some concern has been raised in relation to the spawning activities of whitefish. The reduction in water levels caused by the "cutback" described earlier could adversely affect incubation of whitefish eggs in the Cross Lake area. No detailed study of this problem has been undertaken. Therefore, little more can be added to the issue at this time. In general, studies completed to date indicate that the Lake Winnipeg regulation project will not have any substantial impacts, either positive or negative, on fish productivity in Cross Lake or the adjoining waterbodies. It should be noted that this statement must be read within the context of a lack of knowledge concerning the impact of water level fluctuations on whitefish spawning.

The impacts on commercial fishing are expected to be more significant. There will likely be short term disruptions in production due to possible changes in fish migration patterns and fish productivity. These variations are not expected to be substantial. However, access to the resource and transportation pattern changes will probably have significant effects. The lower water levels in summer will result in more difficult navigation on Cross Lake. Further reduced levels may impede the movement of fishermen from Walker Lake to Cross Lake. The winter fishery may be disrupted due to possible poor ice conditions resulting from anticipated increases in water level fluctuations and the effects of the "cutback." If poor ice does disrupt this fishery, the losses to winter fishermen could be substantial. However, this fishery accounts for only about 5% of the average annual net income to fishermen and, therefore, the impact on community income would be minimal. On the positive side, the greatest factor is the possible exploitation of the Jenpeg access road with its ensuing reduction in transportation costs. At present, the commercial harvest is flown from Cross Lake to Wabowden where it is transhipped to rail cars or refrigerated trucks for furtherance to Winnipeg. The cost of air freighting has been estimated to be approximately 5.7¢/pound (Cross Lake to Wabowden) and 6.3¢/pound (Walker Lake to Wabowden).[1] The installation of a holding station at the mouth of the Minago River in combination with regular scheduled truck pick-ups from the new packing station in Wabowden could result in a reduction in transportation costs by at least 50%. Assuming that these savings will, in large part, accrue to local fishermen, an average increase of

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[1] Ibid., p. 85.

$300 to $400 in annual net income per fishermen could be expected.[1]

In summary, the negative economic impact on the Cross Lake fishery is not expected to be substantial. There may be a slight drop in production during the years 1979 and 1980 due to disruptions in the spawning patterns of fish after Jenpeg becomes operational in November of this year. However, this loss would probably be more than offset by the savings to be gained through rationalization of the transportation aspects of the local fishery. These savings, if coupled with expected price rises and the possibility of an increased quota on Cross Lake, lead to the conclusion that the future prospects of the Cross Lake fishery are reasonably good. Nevertheless, mitigation measures as a result of the hydro development may still be necessary.

Although, in general, the Cross Lake commercial fishery may not be subject to major negative impacts, there remains a number of specific measures that could be taken to alleviate possible problems or exploit new opportunities arising from the Lake Winnipeg regulation project.

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[1] Past production records indicate that the Cross Lake fishery's harvests have been at or near lake quotas in almost all years. Assuming these production levels will be maintained in the future and that transportation costs are reduced from approximately 5.7¢/lb. to 2 to 2.5¢/lb., then the average savings per fishermen can be expected to be between $300 and $400.

Recommendations

1. THAT fishermen's real property losses (e.g., boats, nets), resulting from excessive low or high waters or abrupt fluctuations in water levels due to Jenpeg control, be replaced or equivalent cash payments made.

2. THAT construction of control structures at the outlet of Cross Lake with a view to mitigating the anticipated increases in water level fluctuations and reversal of the natural water regime, be initiated as soon as possible.[1]

3. THAT a fish holding station at the mouth of the Minago River be provided as soon as possible in order to exploit opportunities for transportation cost savings resulting from the Jenpeg acess road.

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[1] Ibid., p. 125.

4. THAT the outlet of Walker Lake be monitored to assess the disruption to transportation between Walker and Cross Lakes, and, if necessary, channel improvements be initiated to ensure water access.

5. THAT compensation for income losses imposed by disruption of the fishery be made available to affected fishermen, in the form of either cash payment or equivalent alternatives.

(3) Hunting

Hunting in Cross Lake continues to provide a substantial amount of income-in-kind. It is estimated that this activity provides 5% of total community income. The two major sources of food are moose and waterfowl. Table 11 summarizes estimates of the value of this activity to the community, by season. See Technical Report #5 for a discussion of the methodology employed in deriving these estimates.

Table 11

ESTIMATED INCOME-IN-KIND DERIVED FROM LAND FOOD: BY SEASON - CROSS LAKE*

Specie	Winter	Spring	Summer	Fall	Total
Moose	$16,000	$ 2,000	$ 3,000	$30,000	$ 51,000
Fish	37,000	29,000	27,000	38,000	131,000
Waterfowl	-	26,000	1,000	23,000	49,000
Other Animals	300	17,000	-	5,000	23,000
TOTAL	$53,000	$73,000	$31,000	$97,000	$254,000

*Source: Interviews with local residents and numerous personal communications with government field staff. Manitoba Bureau of Statistics, Manitoba Price Statistics, January, 1974, Hudson Bay Company Ltd.

Hunting also accounts for approximately 39% of the total value of land food.

After water regulation, there may be minor disruption of the moose population due to increased water level fluctuations and disruption of habitat. No adverse impacts to waterfowl are expected in the area.[1] However, a more important effect on wildlife populations may arise from increased hunting pressures as a result of large inflows of outside construction workers to the area. There is some indication that this has in fact happened and that it has necessitated a more stringent application of game regulations.[1]

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[1] Op. cit., F. F. Slaney & Company Ltd.

Recommendation

THAT existing game regulations continue to be strictly enforced in the outlet lakes area.

(c) The Wage Economy

The wage earning sector of the Cross Lake economy centers around the provision of local community services and employment generated by resource development in the vicinity of the community. Table 12 summarizes community income generated from wage employment in 1972/73. It is immediately apparent that income derived from construction work related to Manitoba Hydro's development has had a substantial positive impact on community income.[2] Government

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[1] Personal communications with Manitoba Department of Mines, Resources & Environmental Management field staff.

[2] This effect can in part be attributed to a highly effective employment service provided by Northern Manpower Corps, Manitoba Department of Northern Affairs.

Table 12

ESTIMATED COMMUNITY INCOME FROM THE WAGE ECONOMY BY SECTOR - CROSS LAKE, 1972/73*

Sector	Income ($)	Number Employed	% of Income	
Resource Development:				
i) Hydro Development	634,000	100	97%	
ii) Forestry	16,000	8	3%	
Sub-Total	650,000	108		53%
Government:				
i) Education & Medical	172,000	24	43%	
ii) Community Infrastructure	165,000	50	42%	
iii) Other	59,000	7 full time 20-25 part time	13%	
Sub-Total	396,000	101-106		33%
Service:				
i) Transportation	41,000	15	25%	
ii) Retailing	71,000	16	43%	
iii) Other	52,000	7	32%	
Sub-Total	164,000	38		14%
TOTAL	$1,210,000	247-252		

*Source: Manitoba Departments of Northern Affairs, and Mines, Resources and Environmental Management.
Canada, Department of Secretary of State and Indian and Northern Affairs.

employment is the second largest component of the wage economy, and the private sector is the third.

It should be noted that without hydro development, little of this income would have been generated since there have been and continue to be very few wage employment opportunities in and around the community. In addition, the employment has provided an opportunity for large numbers of Cross Lake residents to gain experience in heavy construction work. However, the training value of this opportunity has not been fully exploited. Most local residents have been employed as unskilled labour with a small number receiving semi-skilled or skilled positions. There does not appear to have been any significant change in this pattern since the initiation of construction work in 1972.

Future employment opportunities in this area are difficult to define with any degree of accuracy. The present employment generated by Manitoba Hydro development will decrease rapidly until 1976. After 1976, approximately six or seven permanent skilled positions will be available at Jenpeg with some seasonal reservoir management job opportunities occurring periodically. This rapid decline in jobs, when coupled with an increase in the local labour force by approximately 250 to 300 persons in the next five years, creates a pressing need for the development of a local employment strategy.[1]

This study cannot provide a detailed local employment strategy. However, some suggested basic principles and areas where future job creation opportunities appear to be good may be a useful starting point. The previous discussion makes it evident that in the past, the resource base of Cross Lake has not been capable of supporting a high level of employment in the community. This has necessitated movement out of Cross Lake to find employment, usually of a temporary nature. This trend is likely to continue in the future. Hence, a basic principle of any local employment strategy could be the encouragement of mobility out of the community. As mentioned previously, the provision of a convenient all-weather road link could facilitate this process. Opportunities exist for future employment in forestry operations in the Sipiwesk Lake area and in tourism throughout the area.[2] In the community, there appear to be opportunities in the service sector and, to a lesser extent, the resource sector. It is expected that the level of services available to Cross Lake will increase and, therefore, jobs connected with operation and maintenance will likely become available. There appears to be potential for a small modern sawmill operation to serve the local market and replace the outmoded facility which is presently in use. Further, the provision of fresh produce locally has potential employment opportunities.

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[1] Derived from demographic data provided by Manitoba Department of Northern Affairs and Canada, Department of Indian & Northern Affairs.

[2] The Sipiwesk Lake area will provide approximately one-third of Manitoba Forest Resources' total production in the future. Tourism development potential exists in the Minago River area and the Walker Lake area.

As a result of Manitoba Hydro's development in the outlet lakes area, substantial levels of short term employment have been created in Cross Lake. This has led to increased incomes and a higher level of skills among a large part of the local labour force. If these employment levels are to continue, a number of actions must be taken. It is important to note that these actions tend to fall within the area of general northern development rather than mitigation in the strict sense. However, it is felt that, due to the catalytic effect of change which can be associated with a development of this nature, Manitoba Hydro has some responsibility to ensure implementation of these recommendations.

Recommendations

1. THAT job opportunities in the areas of forestry, community services and tourism be investigated in detail and action be taken to ensure local participation.

2. THAT the relevant Federal and Provincial agencies develop, *in consultation with the community*, a local employment strategy for Cross Lake.

3. THAT Manitoba Hydro and appropriate Federal and Provincial agencies, in consultation with the community, build an all-weather road linking Cross Lake with the Jenpeg road to facilitate labour mobility.

(d) The Transfer Payment Economy[1]

Cross Lake received approximately $666,800 in government transfer payments during the period of April 1972 to March 1973.

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[1] For a detailed analysis, see *Technical Report #5, Cross Lake Community Profile.*

These payments were in the form of social assistance, family allowance and old age pensions including guaranteed old age supplement payments. Social assistance accounted for $466,400 (70%) of total payments, while family allowance and old age pension accounted for $96,000 (14%) and $104,000 (16%) respectively. Table 13 summarizes the social assistance payments.

Unemployment insurance payments were not included because no data was available. However, personal communications with local residents seem to indicate that this program is not utilized to any appreciable extent by eligible local residents.

(e) Community Infrastructure

The level of community services available in Cross Lake has risen steadily over the past fifteen to twenty years.[1] At present, there are six schools in the community, a nursing station, office facilities for local government, a post office, one large store (Hudson Bay Company), and a number of churches. Recreational facilities include two buildings which can be used as theatres, two outdoor hockey rinks, sport fields, a beach and

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[1] Information outlined in this discussion concerning the nature of community services available was primarily derived from Manitoba Department of Northern Affairs files.

Table 13

SOCIAL ASSISTANCE PAYMENTS - CROSS LAKE
12 MONTH PERIOD ENDING MARCH 1973

Month	$	No. of Treaty*	$	No. of Non-Treaty**	$	Total Persons
April	41,551	863	3,963	93	45,515	956
May	38,612	1,037	3,421	103	42,534	1,140
June	33,467	825	3,662	117	37,129	942
July	33,801	919	3,753	94	37,554	1,013
August	37,757	1,026	3,669	89	41,426	1,115
September	34,375	975	3,377	106	37,752	1,081
October	28,474	696	3,512	96	31,986	792
November	33,388	878	3,428	88	36,816	966
December	36,429	921	3,782	87	40,211	1,008
January	39,749	953	3,760	94	43,509	1,047
February	37,514	1,047	3,126	79	40,690	1,126
March	18,549	881	2,766	59	21,315	940
TOTAL	413,666	918 $\bar{x}$	42,720	92 $\bar{x}$	456,386	1,010 $\bar{x}$

* SOURCE: Government of Canada, Department of Indian & Northern Affairs.

** SOURCE: Government of Manitoba, Department of Health & Social Development.

TOTAL POPULATION: 2,000

% of residents receiving social assistance	51%
% of Treaty Indians receiving social assistance	52%
% of Non-Treaty Indians receiving social assistance	40%
$/capita payment - all residents	$228
$/capita payment - Treaty Indians	$233
$/capita payment - Non-Treaty Indians	$186

a pool hall. There is also a small restaurant and general store in the community. Police services are provided by two band constables, one community constable and by the R.C.M.P. There is no centralized water supply and sewage system. The community now has telephone and television service as well as diesel electric power services.

The transportation infrastructure can be divided into two categories, internal and external. Internal transportation facilities include gravel and dirt roads along the east shore of the community. Four causeways provide links in the road system. However, there is no permanent road link across the Nelson River between the east and west portions of the community. During open water, this linkage is provided by a footbridge while, in winter, the ice is utilized as a transportation link. There is no commercial taxi or bus service available in the community. However, transportation of school children is provided by boat during open water and by bombardier during winter. Further, it should be noted that the Nelson River continues to be used as a main internal transportation system by boat in the summer and skidoo or bombardier in the winter. Residents tend to live near the shore to take advantage of this natural transportation facility.

External transportation services are provided at present by air, water and winter road. An airstrip is maintained and operated by Manitoba Department of Northern Affairs. Water transportation, via Whiskey Jack Portage, is provided during open water by M. & S. Freighting. The volume of freight shipped into the community via this route has declined over the past few years. Road transportation into the community is confined to a winter road which is constructed annually. Recently this road has run from the mouth of the Minago River (near the Jenpeg construction camp) across the ice on Cross Lake to the community. It is significant that a large proportion of the freight shipped into the community uses this mode of transportation.[1]

The effects of Manitoba Hydro's power development on the community infrastructure will center on transportation facilities and possible damage to structures in the community. There are 25 structures, including four houses located at or below the regulated maximum water level (686.5 ft.).[2] Also, wind set-up and ice conditions could result in damage to another

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[1] During the winter of 1973/74, 2,512 tons of freight and some heavy equipment was shipped into the community over the winter road. Department of Northern Affairs.

[2] Real Property Assessment, Outlet Lakes Area, Lake Winnipeg, Churchill and Nelson Rivers Study Board.

20 structures located below elevation 690.[1] Figure 24 illustrates these details. Internal transportation facilities could be inundated. At present, there are four causeways and four footbridges that are located below elevation 686.5 feet. However, these facilities have been subject to flooding in the past and the Department of Indian and Northern Affairs has undertaken a construction program to upgrade the structures this summer. There is also a possibility of deterioration of ice conditions in the community, leading to the creation of a safety hazard related to winter transportation.

External transportation disruptions could be more significant. Higher summer water levels on Kiskittogisu Lake may result in periodic flooding of facilities located at this end of the Whiskey Jack Portage.[2] There is also a slight possibility that the wharf at the Cross Lake end of the portage will be flooded. The undetermined changes in ice conditions on Cross Lake could be the most critical factor in the provision of

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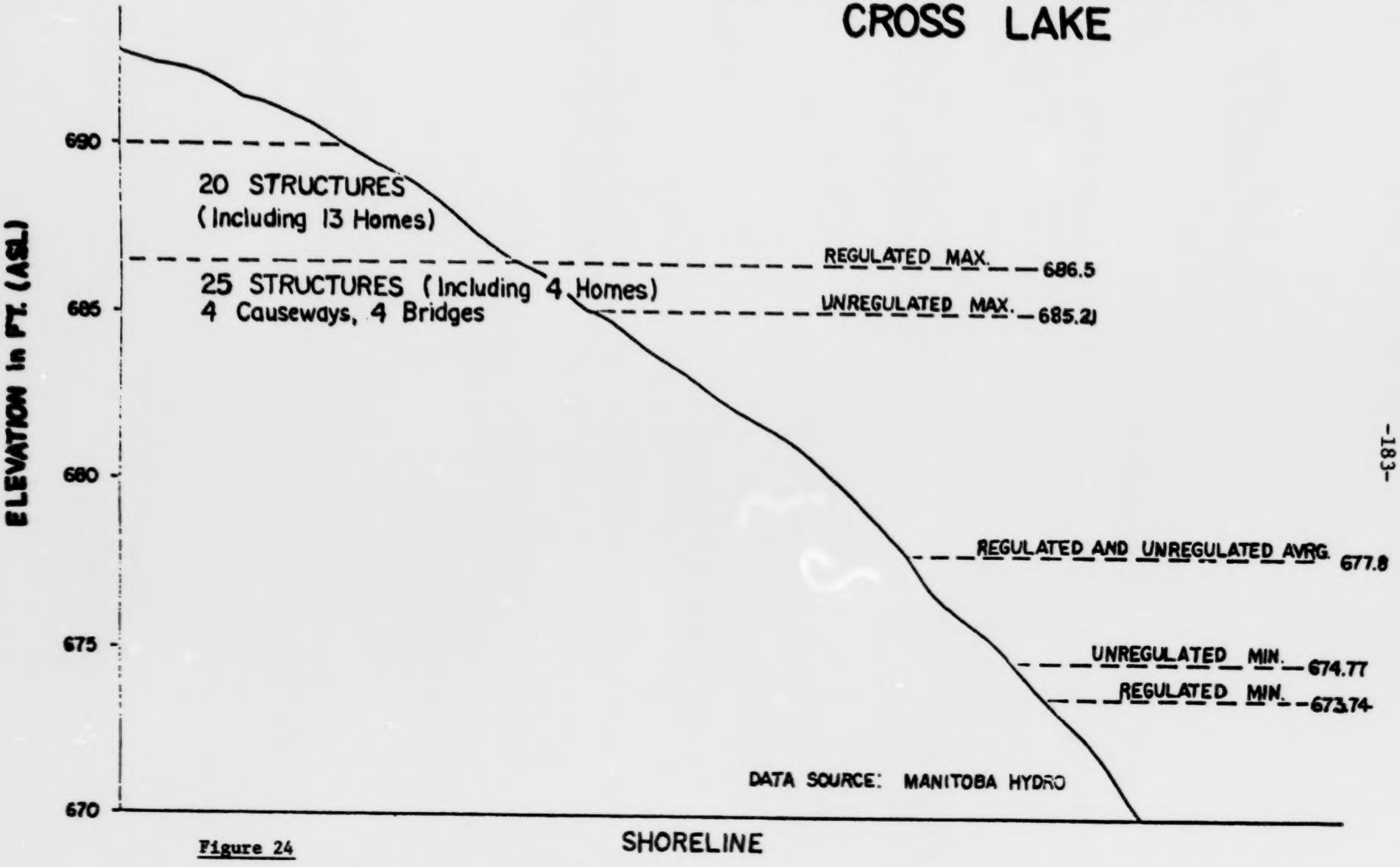
[1] Water Level Study for Cross Lake Community, M. M. Dillon Ltd., January, 1974.

[2] Information received from Canada Department of Public Works indicated that the elevation of this wharf is 713.5 ft. The wharf at the Cross Lake end of the portage is recorded as elevation 685 ft.

REAL PROPERTY DAMAGE
CROSS LAKE



DATA SOURCE: MANITOBA HYDRO

Figure 24

NOTE: THE SHORELINE SHOWN IS FOR ILLUSTRATIVE PURPOSES ONLY.
THE ACTUAL SHORELINE PROFILE VARIES SUBSTANTIALLY THROUGH OUT THE COMMUNITY.
LEVELS INDICATED ARE EXPRESSED AS MEAN MONTHLY LEVELS.

external transportation to Cross Lake.[1] Poor ice conditions after regulation could result in a serious disruption of freighting operations on the winter road. This would have negative implications in terms of the general level of community services and the cost of living, since most freight enters Cross Lake via this route. In addition, tentative plans developed by the Manitoba Department of Northern Affairs indicate that Cross Lake will likely become the supply center for communities located in the northeastern part of the province. These include Oxford House, God's Lake and Island Lake. Future disruption of freighting to Cross Lake could therefore have repercussions on these communities. Established transportation patterns for trappers could also be disrupted by poor ice conditions.

Recommendations

1. THAT docks, homes and other structures affected by high water levels be replaced or relocated by Manitoba Hydro after consultation with local representatives.

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[1] Manitoba Hydro is presently undertaking a detailed ice study of Cross Lake. The report should be available in August, 1974.

2. THAT if poor ice conditions cause serious disruption of winter road freighting into the community, Manitoba Hydro provide an all-weather road link to Cross Lake to ensure adequate transportation services. It should be noted that a number of studies concerning this issue are available.[1]

3. THAT, if necessary, a program of monitoring and marking safe ice routes be undertaken as an interim measure, and that final mitigation measures be determined in consultation with the community.

4. THAT the docking facilities at the Kiskittogisu end of Whiskey Jack Portage be upgraded by Manitoba Hydro to ensure continued use, and if necessary, the facilities located at the Cross Lake end of the portage also be reconstructed.

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[1] See Technical Report #5, Cross Lake Community Profile.

3. THE SOCIAL SYSTEM

(a) The Social Profile

In order to understand the nature of social impact, it is first necessary to understand the rationale and anatomy of the community.[1] The following discussion applies equally to the communities of Nelson House and South Indian Lake. The community exists to perform certain specific functions

- the economic function of production, distribution and consumption of goods and services,

- the socialization function of transmitting knowledge, social values and behaviour patterns to its individual members,

- the social control function of influencing its members toward conformity with its norms,

- the social participation function of providing an opportunity for its members to interact socially, and

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[1] For a further discussion, see "Framework and Study Approach," pp. 60 - 114.

-the mutual support function of providing mutual assistance daily, but especially in times of need or stress.

Arising out of the pursuit of these functions are many interrelated elements including history, beliefs, values, attitudes, norms, goals, leadership positions, power, sanctions for social control and facility. The elements, though interrelated, can be isolated and studied.

These elements find expression, and the functions are performed, through various recognized processes which include: communication; institutionalization (the way organizations assume a structure and act and interact in a predictable way); systemic linkage (the way community groups and organizations relate to each other to form an integrated community base and the way they relate to systems that are external to the community, e.g., local trapper's association, co-operative organization, community councils, churches, etc.); problem solving and decision making; and boundary maintenance (the process whereby a community strives to preserve its unique identity). It is important that these processes be traced in order to understand a community.

The functions, elements and processes mentioned above are interrelated. Therefore, the social impact of change on the community as a whole cannot be meaningfully studied. Rather, the study must assess the way in which change may affect some of the community elements; may interfere with some of the functions; may block, circumvent or subvert some of the processes; or generally influence some combination of elements, functions and processes to the point of generally disrupting the community activities and creating imbalances in a community's sub-system. This disruption will require adjustment and readjustment as the community seeks out and establishes new ways of thinking, believing, acting and interacting while it strives to maintain social equilibrium.

To understand, assess or even predict what the social impact of change may be with a view to suggesting and/or recommending appropriate mitigating social intervention, it is necessary to know a community. The following manner of isolating and studying the elements, functions and processes that constitute a community social system is designed to provide the necessary understanding.

(1) Knowledge and Beliefs

To understand what a community knows and believes about developments that will have (or are having) an effect on change, is to gain insight into:

- the community's sources of information - the channels of communication within the community and with the world outside,

- the degree of community information - whether it is specific, general, or non-existent - regarding certain changes, the impact of that change, etc.,

- whether the community can be expected to participate meaningfully in change on the basis of the knowledge it has, and

- what media of communication an external agency should use in getting information into the community and how communication within the community can be facilitated.

The knowledge and beliefs which are prevalent in a community are a product of the quality and quantity of information received by the community and how effectively it is disseminated through the community.

(i) Receiving Information

Regarding hydro developments, the community of Cross Lake has formally received information from a variety of sources:

-The Cross Lake-Norway House Co-ordinating Committee formed in 1971 has provided some information, both to the community leaders who are members of the committee, and initially to the communities themselves.

-Community meetings with Hydro representatives, with study personnel, and with provincial agency people provided information on a number of issues.

-Broadcasts over the local radio station introduced the interview team but provided very little information about the hydro development.

- A one hour television program (Twenty-four Hours) outlined the background behind the Churchill-Nelson Rivers development controversy. This program was general, and so provided no specific information about hydro related changes at Cross Lake.

- The Amisk Newsletter is geared specifically to events along the Churchill and Nelson Rivers.

- General news on both radio and television provided additional information.

In addition, the large number of residents who have worked on hydro related jobs in the Jenpeg area over the past 2-3 years have provided a significant informal source of information.

(ii) Disseminating Information

Cross Lake people identify informed individuals in the community as their primary source of information regarding hydro developments. These informed individuals may have received their original information informally through work experience or more deliberately and formally through committee and community meetings. Other major sources of information about hydro developments have been radio, visits elsewhere and meetings with the Band, with agency people or with people from other communities.

It is important to note that one of the major sources of information concerning local events is the local radio station (CFNC); this indicates the use of a formal, modern technique in the dissemination of community information. For a summary of information sources for various issues, see Table 14.

Beliefs arise out of the receipt and processing of information which reaches people. If beliefs about a particular issue, e.g., hydro development, are consistent with the best known information about that issue, then the information process is an effective one. In cases where beliefs are inconsistent with available knowledge, the problem becomes one of information-education. There are a number of prevalent beliefs in Cross Lake. For purposes of evaluating the information process, each of these beliefs is compared or contrasted with the best available information.

Generally, Cross Lake people believe that there will be some flooding, that the water will fluctuate unnaturally

Table 14

CROSS LAKE INFORMATION SOURCES[1]

ISSUES Source of Information	LOCAL EVENTS		PROVINCIAL OR NATIONAL EVENTS		HYDRO DEVELOPMENTS	
	A Source	Prime Source	A Source	Prime Source	A Source	Prime Source
Formal Communications						
Radio	N. A.*		31	19	24	16
T.V.	N. A.		18	5	10	4
Printed Material	3	0	6	0	3	1
Notice Board in Bay	15	2	N. A.		N. A.	
Meetings (Band, Agency, etc.)	15	4	19	3	17	6
Informal Communications						
Visits Outside	N. A.		4	1	8	2
Informed Individuals in Community	11	4	15	5	18	7
General Discussion with Friends	33	20	N. A.		N. A.	
Regular Chit-Chat in Bay Store	19	4	N. A.		N. A.	
Regular Chit-Chat in Band Office	5	1	N. A.		N. A.	

*N. A. = Not asked and/or not relevant.

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[1] Derived from interviews in the community.

and that there will be an increased sediment load in the water. They believe that these changes will have the following impacts:

1. The majority of people anticipate that there will be disruptions of the natural resources in the area and the loss of the traditional activities associated with them. The most commonly mentioned resources are fish, moose and ducks; others include furbearers, land, timber and grasslands which have an agricultural potential. In contrast, information to date indicates that impacts on fishing, shorelines and wildlife, with the exception of beaver and muskrats, will be minor. For further detail on this topic see, "The Economy," pp. 153 to 172.

2. Damage to the community's infrastructure is anticipated, particularly with respect to water quality, but also in terms of winter roads, local roads and causeways, and a general community disruption. On the basis of investigations to date, it is anticipated that there could be considerable disruption of existing road transportation facilities into Cross Lake and within the community. However, it is not anticipated that water quality will be

adversely affected by hydro development.

3. There is some concern for the unemployment problem which they believe the community will face when hydro developments are completed. This appears to be a realistic concern which is dealt with in greater detail in "The Economy," pp. 172-177.

On the basis of these observations, a number of conclusions may be drawn:

1. The community's beliefs appear to indicate that people have a relatively good general understanding of the changes in water regime and the impacts which may result.

2. While some of the leadership nucleus may have a good understanding, the word of mouth method of information dissemination is insufficient to provide the majority of the community people with a sound knowledge of the specific details of either the developments or the anticipated impacts.

3. The existence of a local radio station, and the considerable dependence on this source of information provides a relatively unique opportunity for the broad dissemination of objective, first-hand information.

4. Written material is not an effective means of distributing information.

(2) Values and Attitudes

An understanding of basic values and attitudes provides a useful insight into the social, political and economic atmosphere of a community, and the reaction of a community in the process of change.

In a transitional community, new values are emerging, often conflicting with and, therefore, adapting old values. Thus, values change with time but will occur much more slowly than technical change, for example.

Attitudes are formed on the basis of knowledge, beliefs, values and feelings and are thus a product of information, experience, and emotion. As such, they contain a personal conviction which cause attitudes, like values, to be resistent to change.

In Cross Lake, there appears to be a fairly distinct difference between the values of the older people (over about 40-45 years) and those of the younger people. The younger people have a relatively modern world view for a remote community. Attached to this modern view are new emerging values, particularly in relation to earning a living. Whereas many of the older people are still tied to the traditional activities of hunting, trapping and fishing, the vast majority of the young place a greater value on the wage economy or the wage and welfare economy. This emphasis on wage employment is giving rise to attitudes associated with the more modern industrial society, e.g., greater mobility, decreasing family and community ties, and generally learning how to live within and "use" the system.

Thus, the values and attitudes of the younger residents of Cross Lake are likely to cause them to identify new possibilities arising out of the hydro developments. Conversely, the values and attitudes of the older people will cause them to resist the changes imposed by northern development in general and the hydro developments in particular.

(3) Leadership

In a traditional community, gathering its livelihood from the land and living in relative isolation from outside services, the social and political structure tends to be simple and functional. People live in extended family groupings, each one looking to its family head for leadership. When a number of these families are living together as a community, it is customary for one or two families to gain more influence than the others. The heads of these families tend to become the dominant leaders in the settlement. In this situation, leadership is concentrated among very few older patriarchs in the community.

In order to determine the present leadership structure in Cross Lake, a variety of opinions were solicited. The following three groups were asked to identify the leaders:

1. "outsiders" who have had close contact with the community for some extended period of time,

2. the leaders as identified by this group, and

3. the general community - the rank and file.

As Cross Lake has grown and become more complex, the leadership structure has broadened significantly. There is no longer the small core of leadership characteristic of traditional communities. In addition, the majority of the leaders are middle-aged, rather than elderly.

Local people and the nominating panel identified 83 and 82 individuals as leaders, respectively. The leaders themselves identified a much smaller number, 35. The large number of leaders named and the substantial difference in the number named indicates:

a) that there are many individuals who have leadership qualities, and

b) that many of these individuals may not currently be in leadership roles but have been so in the past.

The consistency of opinion, in terms of who the major leaders are, reveals that the leadership structure is well understood by all groups. The results obtained indicate a complex, relatively modern structure. (See Table 15.)

Table 15

LEADERSHIP AND POWER RELATIONS

BY FREQUENCY

Leader	of 32 Community	Rank	of 10 Outside	Rank	of 8 Leaders	Rank
A.	26	1	8	1	7	1
B.	23	3	4	9	6	2
C.	9		5	5	6	2
D.	22	4	5	5	5	4
E.	26	1	4	9	4	5
F.	14	6	5	5	4	5
G.	8		7	3	4	5
H.	14	6	3		3	8
I.	0		0		3	8
J.	2		1		3	8
K.	2		1		2	
L.	0		1		2	
M.	3		1		2	
N.	4		0		2	
O.	2		4		2	
P.	12	8	5	5	2	
Q.	2		0		2	
R.	16	5	1		2	
S.	8		0		2	
T.	4		1		2	
U.	3		8	1	1	
V.	11	9	1		1	
W.	11	9	0		1	
X.	4		2		1	
Y.	5		6	4	1	
Z.	0		3		1	
	+56 others mentioned		+57 others mentioned		+9 others mentioned	

The complexity results largely from the existence of two separate community entities, the non-treaty group and the treaty group. Each of these groups has its own formal power structure, institutionalized as the Mayor and Council (the Community Council) and the Chief and Council (the Band Council), respectively.

In Cross Lake the treaty Indians who were identified as leaders are almost exclusively members of the Council. On the other hand, only 1/2 of the identified non-treaty leaders were Council members and not as many of the Council members were identified as leaders.

This situation gives rise to the observation that leadership is more institutionalized in the treaty group.

At least two factors combine to create this situation:

1. The Mayor and Council was formed only after the implementation of the Northern Affairs Act in 1970. Prior to that time, non-treaty leadership was by an informal "headman" arrangement. Thus the institutionalization of leadership, in terms of both leaders and their followers, is in an "adolescent" stage.

2. The type of decision-making utilized by the Treaty Council tends to focus more attention on the elected leaders.

The duality of this leadership structure also gives rise to power patterns which are both complex and subject to modification with each situation.

Each of the two Councils have some clearly delineated areas of responsibility and in these instances the power structures of the two groups are clearly separated. This gives rise to two discrete power structures, each of which relate to different government bureaucracies.

This situation is unfortunate in that the two groups are subject to different policies, programs and delivery systems. This gives rise to differing levels of responsibility and authority of the two Councils and differing opportunities for individuals. Thus, despite the fact that the groups are living together in one community, there is an acute awareness in both the power echelons and the rank and file, of two distinct factions.

Each Council has an explicit mandate to administer certain programs but there is generally also an implicit mandate or responsibility to sanction all activities related to their respective clientele. This is particularly applicable to the Band Council which is more institutionalized in people's minds. In areas of community planning and decision-making outside the explicit mandate, the power structure becomes further complicated, both by the inclusion of more committees or organizations and by the potential for a power struggle between the two Councils.

Thus, when planning and decisions are required for the community as a whole, rather than for one entity or the other, there is a definite need to consciously co-ordinate the activities of the two factions. The initiative for this co-ordination can come from the community itself but should be facilitated rather than impeded by the efforts (policy, program, delivery) of governments. One rather simplistic example of the division and entanglement of power is in the area of social control, where the RCMP have jurisdiction over the whole community, the two Band Constables have jurisdiction over the treaty element, and the Community Constable has jurisdiction over the non-treaty group.

(e) Decision Making

In the distant past, in Cross Lake, as in other remote communities, leadership was achieved by reputation. People were not elected to formal positions nor were they given specific guidelines, rules and parameters upon which to exercise the authority of their position. As a result, the exercise of the power and privilege associated with leadership was usually subtle and indirect. This indirect leadership influence resulted in a slow process through which community decisions were postponed or delayed until a consensus was reached. The consensus decision-making process proved both advantageous and appropriate; advantageous in that it was an effective method of preventing or managing conflict and turmoil in the community; appropriate in that the decisions required were of a local nature and few in number.

With the institutionalization of the Treaty Council, Band decision-making gradually moved away from the traditional consensus approach and became more formalized. However, in the case of the non-treaty element, decision-making remained with the reputational leader, the headman, until the creation of the elected Mayor and Council in 1970.

Today, with the growing number of decisions required and the increasing size and complexity of the community, both the treaty and non-treaty councils make decisions directly with a minimum of public input. This form of decision-making has an advantage in terms of the amount of time required but has the disadvantage, voiced by a number of people, that the community is no longer involved in the decision-making process. As a result, there is a "no one knows what's going on" attitude. There is disagreement on the cause of this situation in that some say there are not as many meetings as there used to be, while others say that there are fewer meetings because of general community apathy.

While both Councils utilize a similar decision-making process, there is some indication that the Mayor and Council are not involved in as many of the decisions affecting the non-treaty entity as is the case with the Chief and Council for the treaty group. This situation probably results from:

a) the broader mandate of the Band Council, and

b) the longer history of involvement, resulting in a greater institutionalization of the Treaty Council in the minds of their people.

(b) Social Impact

(1) Operational Definition

As stated earlier, the elements and processes in a social system are interrelated and, therefore, change in one component will result in subsequent change in other sectors. Cross Lake is a community in the process of change, in a transitional state between the traditional economy and the wage economy. Accompanying these changes in the economic sector are changes in the social system.

The situation which faces the community now is one of continued change, but change at an accelerated rate due to the existence of hydro developments.

The social impact is the stress which is placed on the community's social system when it is not able to adjust to change as quickly as that change is occurring.

(2) Discussion

A community must develop new ways of doing things in order to be in control of change, especially when the change is inevitable and even imposed. Some changes are relatively easy to achieve. For example, when a utility changes water levels, other inherent physical changes, environmental changes and economic changes follow naturally even though they may be resisted. Similarly, it is easy to effect changes in a community communication system, e.g., when a community suddenly has access to telephones and television, or in a community's transportation system, e.g., when a road comes to the community or a community gets an airstrip and scheduled air run.

However, the rate of technological change is invariably more rapid than cultural changes involving change in perceptions, beliefs, values and social structures. Therefore, resistance to technological change is inevitable. When technological change proceeds despite this resistance, pressure is exerted on the elements and processes (the social system) of the community.

The ability of a community to cope with change and the stress inherent in change[1] will depend largely on a community's autonomy and viability, taken together to mean the capacity of a community to function effectively on a self-determinism basis, i.e., to perform independently the economic, socialization, social control, social participation and mutual support functions.

---

[1] For a detailed analysis of the social stress which accompanies rapid change, see Technical Report #1, Social Change and Stress.

In summary, social impact in a community is inversely related to the degree of control over change which the community can exercise. However, due to the interrelatedness of the components of the social system, social change cannot be viewed as proceeding along a fixed course to a fixed destination and, therefore, social impact cannot be predicted in terms of specific "happenings" or effects.

The difficulty of predicting specifics and the premise that impact is related to community autonomy and viability gives rise to the need to assess the elements and processes of the community in terms of the level of autonomy which they appear to represent. This approach will:

1. provide useful baseline data for future monitoring, and
2. indicate the kinds of inputs which may be necessary to assist a community caught up in the dynamics of change to cope with the new situation.

(3) Impacts on Elements & Processes of the Social System

(i) Knowledge (About Hydro Developments)

The community as a whole has a fairly good general understanding of the changes in water regime and the implications of those changes on the community's resources and infrastructure. However, they appear to lack specific, detailed knowledge about the anticipated changes which in turn gives rise to distortion and exaggeration about the future.

This situation results from the way in which information has reached and been disseminated through the community. Cross Lake residents do not use written material as a source of information. As a result, the majority of Cross Lake residents have received their information indirectly through other individuals in the community whom they consider to be informed.

There are two problems associated with this method of information dissemination:

1. the informed individuals have themselves, received information in "bits and pieces" rather than as a complete comprehensive package, and

2. this indirect word of mouth procedure tends to distort or generalize information of a complex, technical nature, such as information about the hydro development and its expected impacts.

At present, most Cross Lake residents appear to have a reasonable amount of information about hydro developments and therefore are subject to a minimal amount of psychological stress regarding the unknown. However, there are certain interest groups which are under considerable stress as a result of previous experiences and the lack of specific information related to resource impacts. This is particularly applicable to older fishermen and trappers who experienced the more dramatic effects of the Sipiwesk forebay and who have received no information to dispel fears that similar impacts will occur in the Cross Lake area. Furthermore, the current level of knowledge is not sufficient for the community to plan, or to participate meaningfully in planning, for the changes which will occur. This information is required particularly by the leaders who participate in community planning.

Recommendation

THAT, at the discretion of and in consultation with the seven community northern flood committee and the Cross Lake Band and Community Councils, an information-communication process be set up.

This process could be geared to provide:

a) the information required by community leaders in order to participate meaningfully in planning for change,

b) the information regarding expected resource impact required by interest groups, such as fishermen and trappers, and

c) detailed information for the benefit of the general community.

In view of the considerable use made of the local radio (CFNC) and the good general understanding of the hydro developments by the community, a suitable mechanism for the latter may be through question and answer programs on the local radio station.

(ii) Leadership

The most distinctive feature of the Cross Lake leadership is its duality. The leadership core lies largely within the two elected Councils and a few other influential individuals. However, there are many other leaders on the periphery of this leadership core.

In the case of the treaty people, who comprise 88.5% of the population, the Band Council has the responsibility for administering (financially and managerially) all ongoing programs relating to their clientele. The Band Council is perceived as being highly institutionalized, in the minds of both the leaders themselves and the rank and file.

In the case of the non-treaty people, leadership is more diverse with only one-half of the leaders being members of the Community Council. This Council represents 11.5% of the population and their current responsibilities are limited to lobbying for various programs for their members.

Generally, one sector or the other deals with an issue by using the agency channels which that sector best understands. There is an increasing need for community planning and action rather than the sectoral approach. However, it will be difficult for the community to pursue a co-ordinated approach if the governmental agencies with which it deals do not adopt a similar approach.

The changes accompanying the current hydro developments will affect both segments of the community, the clientele of both the federal and provincial governments, and the inputs of many departments and branches of those governments. The need for community planning for these changes provides the opportunity (and the necessity) for both the community and all agencies of government to co-ordinate their approach to community problem solving.

(iii) Decision Making

The majority of decisions about local community affairs are made sectorally by either the Band Council or the Community Council. Many of the decisions made by the Band Council are more substantive than those of the Community Council because of the broader authority and responsibility held by the Band.

The two Councils use the same decision-making technique, that of direct decisions by the Council without the input of public opinion or referendum. This system of decision-making has the advantage of time efficiency while holding the inherent danger of lack of commitment or support from the general populace.

The need to solve the many and varied problems associated with rapid change has put unprecedented pressures on community decision-makers, who must now deal with a large number of more complex issues in a smaller amount of time than ever before. The community of Cross Lake has a modern form of decision-making which allows it to make many decisions, and quickly. Thus, it is equipped to handle the new pressures caused by the hydro developments. However, with the increasing complexity of the decisions required, it is becoming more difficult for a core of the leaders to acquire adequate background information upon which to base decisions. Furthermore, most decisions are being made sectorally, despite the urgent need for community decisions. Therefore, as change continues there will be an increasing need for joint planning (treaty and non-treaty) or advisory committees to co-ordinate the efforts of the two sectors in the community.

Recommendations

1. THAT information regarding the nature, function and operation of joint planning or advisory committees

be provided to the community.

2. THAT, in the event that such committees are established, appropriate government agencies enhance the effectiveness of these committees through the provision of relevant technical information and expertise.

(4) Ability to Cope with Change

The foregoing analysis of the Cross Lake social system suggests that, on the basis of standards applicable to remote northern communities, Cross Lake is relatively sophisticated and modern. This in turn, indicates that much change has already taken place in recent years, and that the individuals and systems are more receptive and/or adaptable to change than would be the case in a more traditional community.

Some inherent difficulties which may limit this adaptive capacity has been pointed out and mitigating measures have been suggested. However, because the components of the social system are interrelated, changes in one element or process will cause changes in others. This may enhance or reduce the community's capacity to cope with further change. Since it is impossible to predict specific changes and impacts, constant monitoring of the community's social and economic situation is required.

Recommendations

1. THAT a system of monitoring non-physical changes in Cross Lake be set up.

2. THAT appropriate social intervention be provided as the need is identified through the monitoring process.

    This could take the form of workshops for understanding, perceiving and coping with changes; problem-solving techniques; new life skills; use of information; and leadership training.

B. NELSON HOUSE

1. INTRODUCTION

(a) Location

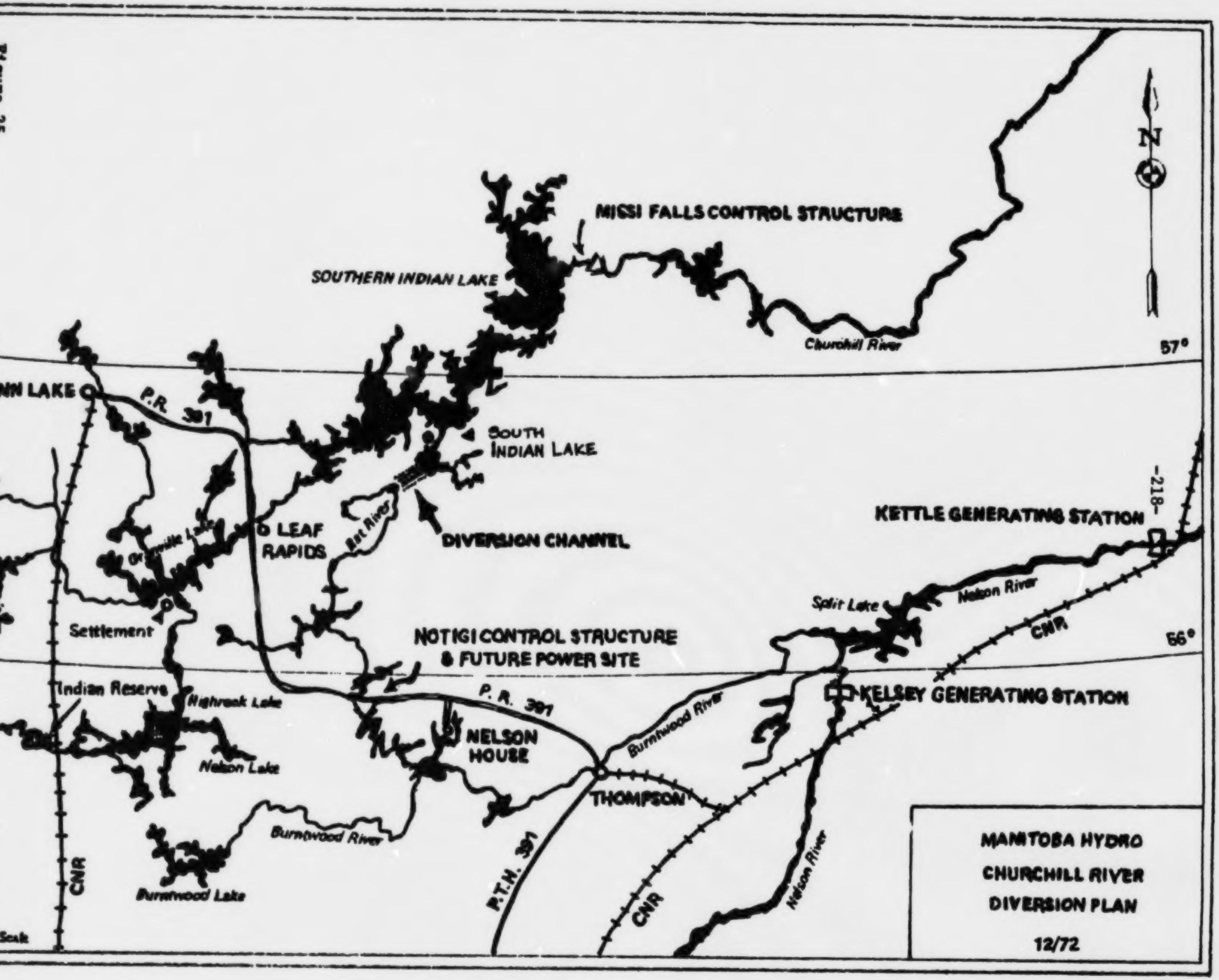
The community of Nelson House is located on the Footprint River Basin on Footprint Lake, north of Threepoint Lake, 40 miles west of Thompson, Manitoba. The drainage basin is part of the Rat, Burntwood and Nelson Rivers system and covers a total area of 512 square miles. The population of Nelson House (approximately 1,260) is concentrated in three areas, Poplar Point, Mission Point and Dog Point, extending over a 4 mile area. (See Figure 25 and 26.)

(b) The Water Regime

In order to generate additional hydroelectric power, Manitoba Hydro has been issued a licence to divert not more than 30,000 cubic feet per second of water from the Churchill River at Southern Indian Lake into the Nelson River via the Rat-Burntwood River systems.

The community of Nelson House is situated north of the actual diversion route. However, it will be directly affected if changes in the water regime on Threepoint Lake result in increased levels on Footprint Lake.

Figure 25


N
MISSI FALLS CONTROL STRUCTURE
SOUTHERN INDIAN LAKE
Churchill River
57°
57°
LYNN LAKE
P.R. 391
SOUTH INDIAN LAKE
LEAF RAPIDS
Granville Lake
Rat River
DIVERSION CHANNEL
KETTLE GENERATING STATION
Split Lake
Nelson River
CNR
Settlement
56°
56°
NOTIGI CONTROL STRUCTURE & FUTURE POWER SITE
Indian Reserve
Highrock Lake
P.R. 391
NELSON HOUSE
KELSEY GENERATING STATION
Burntwood River
Nelson Lake
THOMPSON
Burntwood River
P.T.H. 391
CNR
Nelson River
Burntwood Lake
CNR
Not To Scale
MANITOBA HYDRO
CHURCHILL RIVER
DIVERSION PLAN
12/72

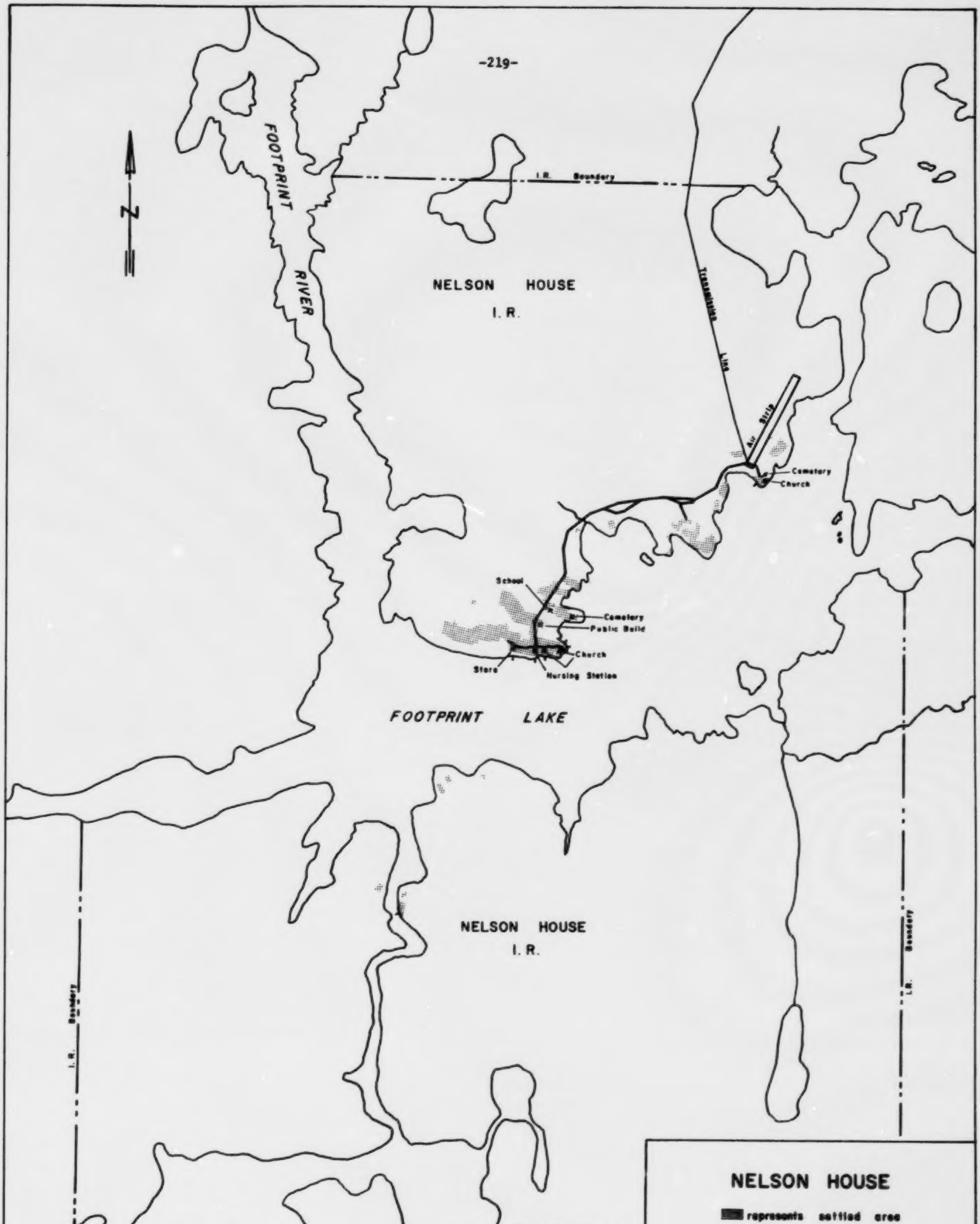

N
FOOTPRINT
RIVER
I.R. Boundary
NELSON HOUSE
I. R.
Transmission Line
Air Strip
Cemetery
Church
School
Cemetery
Public Build
Church
Store
Nursing Station
FOOTPRINT LAKE
NELSON HOUSE
I. R.
I.R. Boundary
I.R. Boundary
I.R. Boundary
THREEPOINT
LAKE
NELSON HOUSE
▨ represents settled area
Scale: 1 inch= 3300 feet approx.

Figure 26

Nelson House

Nelson House

In order to assess the character and extent of such impacts, it is necessary to have a clear understanding of:

i) the components of the development project which relate to the community,[1] and

ii) the changes in the water regime that are expected to occur as a result of the project.

(1) The Unregulated Condition

Levels

There is a lack of data concerning Footprint Lake which leads to difficulties in establishing the nature of the present water regime. Simulation data provided by Water Resources Branch for the vicinity of Nelson House are presented below.[2]

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[1] See Project Description, pp. 31 ff.

[2] The period of record for this data is 1928 to 1966. All figures are expressed as mean monthly elevations.

It is apparent that the unregulated levels are generally higher in summer than in winter and that the range of fluctuation is substantial.

Table 16

MEAN MONTHLY WATER LEVELS, NELSON HOUSE*

Estimated Unregulated	Open Water (Feet ASL)	Ice Cover (Feet ASL)
Minimum	777	776
Average	784	780
Maximum	790	784
Range	13 feet	8 feet

*Source: Water Resources Branch

Flows[1]

Natural flows on the Footprint River near the community have averaged at approximately 300 to 400 cfs over an annual period. In the Rat River, flows have averaged 1,200 cfs while the average annual flow of the Burntwood River has been about 1,500 cfs.

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[1] Manitoba Water Resources Branch.

(2) The Regulated Condition

Levels

Under regulation, water levels at Nelson House will increase substantially. Table 17 outlines the anticipated new conditions, assuming three development possibilities. The first case, no Wuskwatim development, is likely to prevail until at least the mid-1980's. In this case, levels will be more stable than under unregulated conditions, but substantially higher. Further, there is a slight possibility that severe ice jam conditions could develop during the winter, resulting in water levels as high as 818 to 820 feet ASL. Under the other two cases, summer water levels are expected to be higher while winter levels will generally remain the same as in Case #1. However, ice jam conditions are not expected to occur with the Wuskwatim development. In addition, the levels under regulation will be higher in winter than in summer, the reverse of seasonal fluctuations in the unregulated condition.

Table 17

ESTIMATED AVERAGE REGULATED WATER LEVELS, NELSON HOUSE*

Development Alternatives	Open Water (Feet ASL)	Ice Cover (Feet ASL)
Without Wuskwatim	798	810-812
With Wuskwatim (Forebay 800')	803	810-812
With Wuskwatim (Forebay 810')	811	810-812

*Source: Manitoba Hydro

Flows

Flows under regulation are expected to remain stable at an average of 30,000 cfs on the Burntwood River. This is a dramatic increase compared with the unregulated condition. No data are available for the immediate vicinity of the community but indications are that flows will not increase sufficiently to disrupt ice formation or open water transportation around the community.[1]

---

[1] Personal communications with Manitoba Hydro and Provincial Government field staff.

(3) The Footprint Dam

A proposal has been made to construct a dam between Footprint and Threepoint Lakes, and to install facilities for pumping the outflow from Footprint River over the dam. This development would maintain levels at the average unregulated elevation. The possibility of including this structure in Manitoba Hydro's development project is still under discussion with the community.

2. THE ECONOMY

(a) Summary of Incomes

In 1972/73, the total income of Nelson House was approximately $1,280,000, while the average income per person in the labour force was $3,750. The community income is presented in two different but related ways - by economic activity and by type of economy. These are presented in absolute figures (see Table 18) and in percentages (see Table 19).

Three types of economies are identified -- the traditional economy, the wage economy, and the transfer payment economy. Economic activities include fishing, trapping, hunting, gathering fuel wood, hydro development, service industries, and the government

Table 18

SUMMARY OF INCOME DERIVED FROM ALL SOURCES - NELSON HOUSE, 1972/73*

Economic Activity	Traditional Economy		Wage Economy	Transfer Payment Economy	Total
	Cash	Income In Kind			
Fishing	$10,700	$ 46,100	$ -	$ -	$ 56,800
Trapping	17,600	29,900	-	-	47,500
Hunting	-	34,200	-	-	34,200
Fuel Wood	-	38,500	-	-	38,500
Hydro Development	-	-	470,000	-	470,000
Government					
Permanent	-	-	119,200	358,000	602,200
Temporary	-	-	125,000		
Service Industries	-	-	30,000	-	30,000
TOTAL	$28,300	$148,700	$744,200	$358,000	$1,279,200

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*For sources see detailed tables concerning each economic activity.

Table 19

PERCENTAGE OF INCOME DERIVED FROM ALL SOURCES - NELSON HOUSE, 1972/73*

Economic Activity	Traditional Economy		Wage Economy	Transfer Payment Economy	Total
	Cash	Income In Kind			
Fishing	1	4	-	-	5
Trapping	1	2.5	-	-	3.5
Hunting	-	2.5	-	-	2.5
Fuel Wood	-	3	-	-	3
Hydro Development	-	-	37	-	37
Government					
Permanent	-	-	9	28	47
Temporary	-	-	10		
Service Industries	-	-	2	-	2
TOTAL	2	12	58	28	100

---

*For sources see detailed tables concerning each economic activity.

sector. The three sub-economies and related activities are discussed in detail in Parts (c) to (e) below.

The economic activity of fishing provided $56,800 or 5% of community income, trapping $47,500 or 3.5%, hunting $34,200 or 2.5%, fuel wood $38,500 or 3%, hydro development $470,000 or 37%, service industries $30,000 or 2% and government $602,200 or 47%. Government activities are subdivided into wages - $244,200 or 19% and transfer payments $358,000 or 28%.

When community income is considered from the point of view of types of economies, the traditional economy accounts for $177,000 or 14% of total community income, the wage economy generates $744,200 or 58%, and the transfer payment economy $358,000 or 28%. (See Tables 18 and 19.)

(b) Labour Force

The population of Nelson House is approximately 1,260, consisting of 672 persons 16 years of age and younger, 541 persons between 16 and 65 and 47 persons 65 years of age and older.[1]

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[1] See Social and Economic Impact of the Nelson River Hydro Development (With Emphasis on South Indian Lake), Preliminary Report, June, 1973, pp. 131 ff.

The labour force was estimated by determining the total number of males between 16 and 65 who are not attending school, and the number of single females between 16 and 24 who are not attending school. The resulting labour force estimate is 343, as shown in Table 20 below.

Table 20

LABOUR FORCE OF NELSON HOUSE

Age Group	Male	Female	Total
Under 20	46	38	84
20 - 40	153	28*	183
40 - 65	76	-**	76
TOTAL	275	66	343

*Ages 20 to 24 inclusive

**Not Included

A significant characteristic of the labour force is the large percentage of unskilled workers and trappers. As indicated in Table 21 below, only 3-4% of the labour force falls into the professional or qualified tradesman category, and 12% to 15% in the semi-skilled category. Approximately 39% to 55% are engaged in trapping and/or fishing. Some of the trappers and fishermen may also work for wages. The remaining 35% to 44% are unskilled and do not fish or trap.[1]

Table 21

SKILLS INVENTORY - NELSON HOUSE, 1972

Labour Force	Number	Percent
Skilled	8-12	3-4%
Semi-Skilled	40-50	12-15%
Unskilled	120-150	35-44%
Fishermen	25-45	7-13%
Trappers	115-145	32-42%

The majority of the fishermen and trappers are in the 40-65 age group whereas the majority of those working for wages are in the 20-40 age group. For example, 70% of the trappers are over 45 (some are over 65 years of age). In addition, 60% of those in the 40-65 age group of the labour force speak little or no English, whereas nearly all of the labour force below 40 years of age are English speaking.[2]

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[1] Derived from Human Resources Survey, Department of Indian and Northern Affairs; the files of the Manitoba Department of Northern Affairs and the files of the Manitoba Department of Mines, Resources and Environmental Management.

[2] Ibid., Human Resources Survey.

A number of workers have shown their willingness to travel outside of the community for varying periods of time to take construction jobs. A breakdown is provided below.

WILLINGNESS TO RELOCATE

	Male	Female
Sample size	158	186
Total willing to relocate	29 (18%)	15 (8%)
Under 40 years of age	26	13

REASONS FOR RELOCATION

	Male	Female
Permanent employment	20	10
Seasonal employment	3	2
Other	6	3
TOTAL	29	15

There have been a number of placements of Nelson House workers by the Northern Manpower Corps in jobs at Kettle Rapids, Jenpeg, Notigi, Thompson and other centres. The turnover of such workers is high. One contractor estimated that he employed an average of 20 Nelson House workers at one time over a one year period. At the end of that period, he sent out approximately 100 T4 slips to the community. On the average, 40-50 men have been employed outside of the community on construction jobs. The majority have worked on bush clearing at the Notigi site. It is difficult to estimate the number of workers who will be willing to leave the community for seasonal work in the future, particularly if it involves travelling long distances from the community.

(c) The Traditional Sector

Traditional economic activities, i.e., fishing, trapping, hunting and gathering wood for fuel, are sources of both cash income and income in kind. Of the $177,000 income generated by traditional activities in 1972/73, 16% was in the form of net cash income and 84% was in the form of income in kind. Income-in-kind, especially country food, is generally shared amongst all households in the community. The cash income was earned by 130 to 150 people - approximately 29 fishermen and 127 trappers.[1] Some of the 29 fishermen are also trappers.

---

[1] Derived from files of the Manitoba Department of Mines, Resources and Environmental Management.

(1) Trapping

Trapping accounts for approximately 3½% of the community income. Of this, 1% derives from the value of fur and 2½% from the value of the meat obtained from the trapline. For the six year period between 1967/68 to 1972/73, the average gross value of fur sold at the Winnipeg auctions was $60,000, and the estimated average net value was $24,040. The number of individuals who trapped during that period averaged 126. (See Table 22, below.)

Table 22

VALUE OF FUR HARVEST & NUMBER
OF LICENCES, NELSON HOUSE RESIDENTS[1]

Year	Gross Value	Estimated Net Value	Number of Trappers
1967/68	$63,400	$25,360	129
1968/69	105,600	42,240	145
1969/70	55,300	22,120	126
1970/71	43,800	17,520	114
1971/72	48,600	19,440	117
1972/73	44,000	17,600	127
AVERAGE	$60,100	$24,040	126

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1. Ibid. Manitoba Department of Mines, Resources & Environmental Management.

With the diversion of the Churchill River into the Rat River, 26 traplines will be affected. (See Figure 27)

Fifty-five trappers are registered holders of these lines. The average annual gross value of the fur produced on these traplines over the past six years is $33,850 and the net value is approximately $13,500. (See Table 23.)

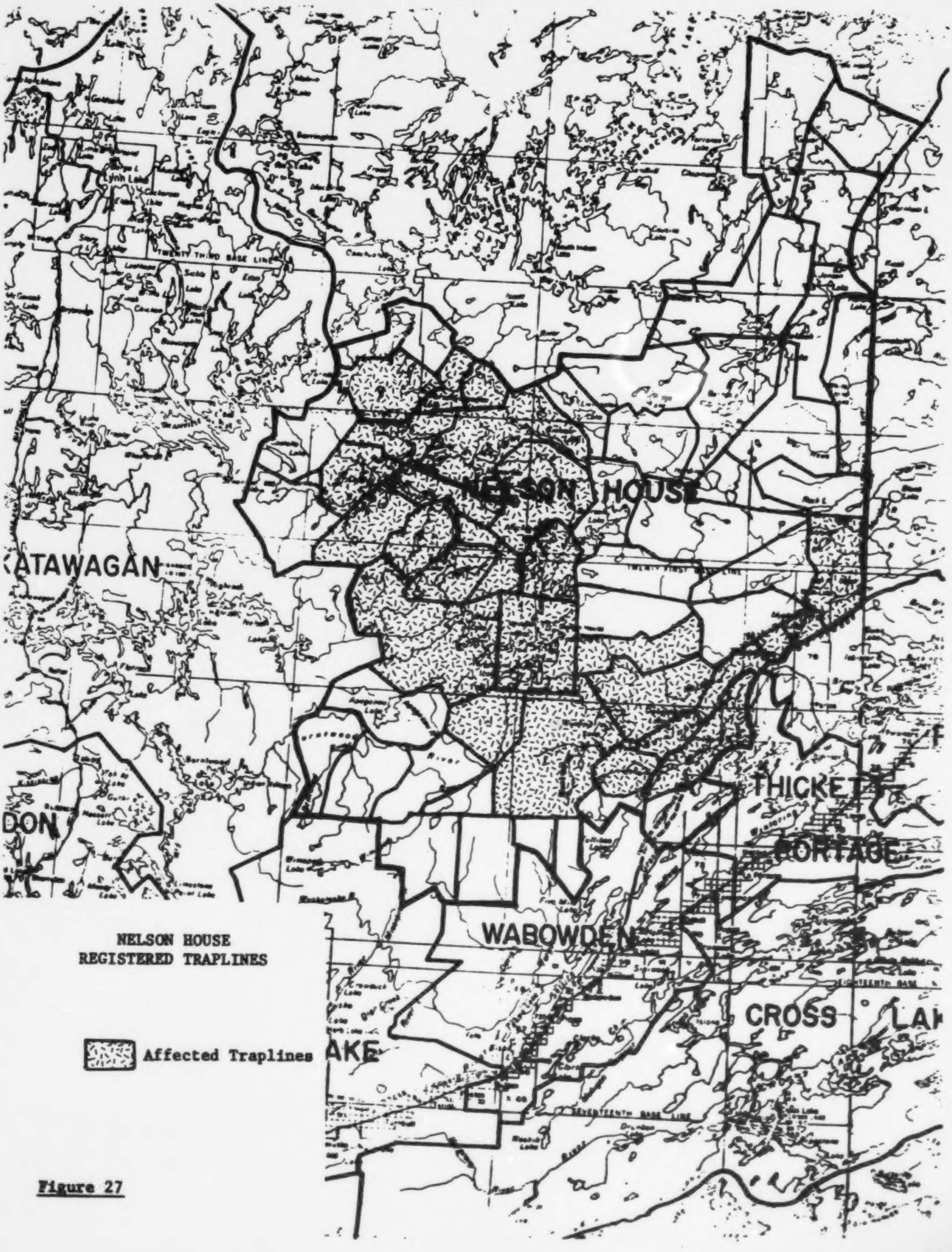
Table 23

COMPARISON OF TOTAL GROSS VALUE OF FUR HARVEST TO GROSS VALUE ON TRAPLINES AFFECTED BY DIVERSION*

Year	Gross Value	Gross Value on Affected Lines	% of Gross Value	Net Value on Affected Lines
1967/68	$63,400	$24,800	39%	$ 9,900
1968/69	105,600	62,700	59%	25,000
1969/70	55,300	32,900	59%	13,200
1970/71	43,800	23,000	52%	9,200
1971/72	48,000	34,300	70%	13,700
1972/73	44,000	25,400	57%	10,200
AVERAGE	$60,100	$33,850	56%	$13,500

*Source: Manitoba, Department of Mines, Resources and Environmental Management.

When the traplines are flooded, the trappers will be affected in a number of ways:


NELSON HOUSE
ATAWAGAN
DON
THICKET
PORTAGE
WABOWDEN
CROSS
LAK
AKE
TWENTY THIRD BASE LINE
SEVENTEENTH BASE LINE

NELSON HOUSE
REGISTERED TRAPLINES

▨ Affected Traplines

Figure 27

-fewer animals may be available because of diminishing habitat,[1]

-those trappers who are relocated to new trapping grounds will have to find "new fur." It will take one to two years for a trapper to have as thorough knowledge of his new trapping area as he did of his previous trapline, and

-new trails will have to be blazed by those trappers relocating to new traplines.

Animals Available

For purposes of analysis, the potential production of the Nelson House registered trapline block is assumed to be the average harvest for a recorded historic peak production period. This potential was compared with the average number of pelts harvested during the past six years. The mean production of pelts harvested for these two periods and the difference between the potential and current harvests are shown in Table 24.

---

[1] Wildlife Resource Impact Assessment, Preliminary Report, Lake Winnipeg, Churchill and Nelson Rivers Hydroelectric Projects, May, 1974.

Table 24

MEAN PRODUCTION OF PELTS AT NELSON HOUSE

	NUMBER OF PELTS			
Period	Beaver	Muskrat	Mink	Lynx
Historic 1948/54 (Potential)	1,959	16,814	521	114
Current 1967/68	1,661	2,259	325	441
UNREALIZED POTENTIAL	298	14,555	196	(327)

In the six year historical peak production period, 298 more beaver, 14,555 more muskrats, 196 more mink and 327 less lynx were trapped than in the six year current period.

As a result of the hydro project, 155 square miles (1 to 2 percent of the Nelson House trapping grounds) will be flooded.[1] However, the loss of potential harvest is not directly related to the loss of land area.

The Slaney Report[2] has analyzed, by species, potential loss resulting from the Notigi structure. The findings indicates the following:

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[1] Wildlife Resource Impact Assessment, Lake Winnipeg, Churchill and Nelson Rivers Hydroelectric Projects, May, 1974.

[2] Ibid.

a) Assuming a potential harvest of 0.5 beaver per square mile, the estimated potential loss of beaver harvest is 80. Actual harvest of beaver has ranged between 0.15 to 0.20 per square mile.

b) Flooding may result in the loss of potential habitat for 30 lynx, assuming densities of 0.2 per square mile. Actual harvest of lynx has ranged between 0.01 to 0.04 per square mile.

c) Mink will be seriously affected since this species is dependent on shorelines for cover and food supply. Approximately 71% of the mink harvest in the Nelson House trapline section is provided in the R.T.L.'s which will be affected by the diversion.

d) Flooding may result in a loss of potential harvest of 3,500 muskrats.

Table 25 below, compares these projected losses with the unrealized potential estimated in Table 24.

Table 25

SUMMARY OF EFFECTS OF DIVERSION ON FUR HARVEST

	Beaver	Muskrat	Mink	Lynx
Projected Loss	80	3,500	Serious*	30
Unrealized Potential	298	14,555	196	(327)

*Numerical estimate not available.

While projected losses may not appear to constrain future fur harvests, it must be recognized that because populations of animals fluctuate from year to year, the numbers available for harvest will vary. The populations will continue to fluctuate regardless of the diversion. In low production years the numbers available will be a constraint on the fur harvest while in years of high production, the numbers available will have no impact.

Re-Organization of Traplines

In meetings with the Department of Mines, Resources and Environmental Management personnel, Nelson House trappers have agreed to re-organize trapline boundaries so that the productive land available to each trapper is equalized. In this re-organization, a number of trappers whose lines are not directly affected by flooding will forfeit some of their trapline land to affected trappers. As a result of this re-organization, no trapper will be forced to discontinue trapping.

Those trappers who are relocated will have to devote a portion of their trapping time to searching for "new fur" and as a result will suffer a loss of income. Unless the trapper is compensated for this loss, he will suffer undue hardship during that period. Indeed, it may be unwise for him to trap at all if a reduced income for this period causes hardship to his family. It is suggested that Manitoba Hydro and the trappers reach a mutual agreement regarding compensation for losses incurred while searching for new fur.

New Trails

The Rat and Burntwood River systems have been used by trappers for access to their individual traplines. The unavailability of this traditional means of access will necessitate the blazing of new access routes.

i) New trails will have to be blazed on both sides of the diversion routes.

ii) Branches from the main trails to individual traplines will be needed.

iii) New trails within the altered boundaries of individual areas may be also necessary.

Trapping provides a source of food as well as a source of cash derived from the sale of fur. Meat from muskrats, beaver, lynx and rabbit is consumed by trappers and their families.

The number of meals by season and value of the food obtained as a result of trapping is listed in Tables 26 and 27.[1]

Table 26

VALUE OF COUNTRY FOOD MEALS

	Spring	Summer	Fall	Winter	Annual
Muskrats	$7,470	$ -	$1,525	$ 1,850	$10,850
Beaver	1,390	-	625	6,320	8,335
Lynx	420	45	810	5,550	6,820
Rabbit	280	185	370	3,055	3,890
TOTAL	$9,560	$230	$3,330	$16,775	$29,900

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[1] Data derived from the community survey conducted by the study team.

The impact of the diversion project on the country food derived from trapping is similar to the impact on trapping.

Table 27

COUNTRY FOOD DERIVED FROM TRAPPING - NUMBER OF MEALS BY SEASON

	Spring	Summer	Fall	Winter	Annual
Muskrats	1,661	0	339	411	2,412
Beaver	309	0	139	1,404	1,852
Lynx	93	10	180	1,234	1,517
Rabbit	62	41	82	679	864
TOTAL	2,125	51	740	3,728	6,644

The above analysis indicates that there will probably be substantial negative impacts on trapping in the Nelson House area from the viewpoint of both potential and actual production.

Recommendations

1. THAT the opportunity to earn a livelihood by trapping be maintained. This implies an emphasis on mitigation (development programs) rather than cash payments (compensation).

2. THAT Manitoba Hydro initiate discussions with Nelson House trappers or their representatives, regarding the following issues:

    a) Losses of income incurred by trappers who are relocated as a result of the diversion and must find "new fur."

    b) Losses incurred and additional effort required by trappers who must cut new access trails within their trapping area.

    c) The provision of new trails where traditional routes are disrupted by the diversion project.

(2) Fishing

The Nelson House fishery provides 5% of the total community income. One percent is in the form of cash and 4% is in the form of income-in-kind.

During the past five years, an average of $16,900 Gross income and $10,060 net was earned by Nelson House fishermen. (See Table 28.)[1]

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[1] Derived from files of the Manitoba Department of Mines, Resources and Environmental Management.

Table 28

COMMUNITY INCOME FROM COMMERCIAL FISHING & NUMBER OF FISHERMEN

Year	Gross Income	Net Income	Number of Fishermen
1969	$23,850	$12,580	35
1970	26,180	14,830	46
1971	7,750	4,470	13
1972	16,160	10,680	29
1973	11,000	7,730	33
AVERAGE	$16,990	$10,060	31

The gross and net income earned by fishermen who fished lakes affected by the Hydro project during this period is shown in Table 29.

Table 29

GROSS & NET INCOME OF FISHERMEN

Year	Gross Income	Net Income	Number of Fishermen
1969	$8,910	$5,180	23
1970	6,120	2,750	19
1971	355	215	6
1972	-	-	-
1973	7,130	5,400	19
AVERAGE	$4,500	$2,710	17

Those lakes which will be affected by the hydro project and which have been fished in the past five years include Wuskwatim, Rat, Mynarski and Wapisu Lakes. Of these, the only one that is commercially viable and will be affected by the diversion is Wuskwatim Lake. Net cash earnings from fishing the lake has been as high as $5,000 for a summer season. There is insufficient data upon which to assess the impact of the diversion on the earnings of fishing on this lake.

A fisheries report is currently being prepared by Environment Canada for the Lake Winnipeg, Churchill and Nelson Rivers Study Board. When this data becomes available a more accurate assessment can be made.

There is, in addition, the possibility that the diversion may result in improved fishing in areas that have not been fished in the past five years. An example is the Notigi Reservoir, where there could be a post-diversion increase in the fish population. However, in this case, floating debris may be a deterrent to commercial fishing in the near future.

A summary of earnings from lakes affected by the diversion is listed in Table 30.

Table 30

NET EARNINGS BY NELSON HOUSE FISHERMEN FROM FISHING LAKES AFFECTED BY THE DIVERSION*

Year	Wuskwatim	Wapisu	Mynarksi	Rat
1969	$4,570	$147	$ 18	455
1970	4,703	-	-	($1,955)**
1971	215	-	-	-
1972	-	-	-	-
1973	5,050	350	-	-

* Source: Manitoba Department of Co-operative Development and Freshwater Fish Marketing Corporation.

** Loss

Losses resulting from the hydro diversion could possibly be offset by exploiting unaffected areas more fully. There are a number of lakes fished by Nelson House residents which will not be affected by the diversion. The combined quotas on these lakes have not been harvested in any of the past five years. Unless activities increase, the fishermen at Nelson House will continue to have a larger quota of fish available to them than they have harvested in the past five years.

The potential annual earnings by Nelson House fishermen from commercial fishing activities are approximately $40,500 gross and $26,700 net. In comparison, average gross and net earnings over the past five years have been $4,500 and $2,700 respectively. Table 31 below provides further details on potential earnings.

Table 31

POTENTIAL ANNUAL EARNINGS BY NELSON HOUSE FISHERMEN FROM COMMERCIAL FISHING

Lake	Quota	Potential Gross Income*	Potential Net Income**
Baldock	80,000	$10,768	$ 5,968
Gauer	60,000	11,250	7,650
Leftrook	30,000	5,175	3,375
Uhlman	20,000	2,696	1,496
Wuskwatim	40,000	10,588	8,188
TOTAL	230,000	$40,477	$26,677

* Value of fish based on Freshwater Fish Marketing Corporation's summer 1973 prices, f.o.b. lakeside.

** Production costs = $0.06 per pound.

NOTE: In addition to the above lakes, Suwannee, Rat, Mynarski and Wapisu Lakes are available to Nelson House fishermen for commercial fishing. However, these lakes produce cutter grade whitefish which is the predominant catch species. Therefore, they are not considered economically viable.

The above information suggests:

1. that the potential earnings from commercial fishing are not presently exploited fully, and

2. that even if the full potential were achieved, commercial fishing is unlikely to be significant in terms of future economic development. For example, the potential annual income for Nelson House fishermen is approximately $26,700. By comparison, local employees of the Hudson Bay store earn a total of $26,800 annually.

Domestic fishing provides a greater benefit to the community than commercial fishing. A survey of Nelson House residents indicated that fish provided approximately 11,500 household meals during the past year. At $4 per household meal the value of this fish is $46,000.

At present Footprint Lake is too shallow to be fished extensively, although nets are sometimes set at the narrows northeast of the community. Provided no dam is built between Footprint and Threepoint Lakes, water levels in Footprint will rise, thus improving the prospects for domestic fishing.

At present, most of the domestic fish is caught in the lakes at the headwaters of the Footprint River and in Wapisu and Wuskwatim Lakes.

Recommendations

1. THAT opportunities to fish for a living be maintained.

2. THAT Manitoba Hydro initiate discussions with fishermen who fish Wuskwatim Lake regarding mitigation and/or compensation on the following issues:

    (a) Net loss at Wuskwatim Lake due to floating debris.

    (b) Motor damage at Wuskwatim Lake resulting from "deadheads."

    (c) Income loss resulting from floating debris on Wuskwatim Lake.

(3) Hunting

Hunting provides approximately $34,200 in income-in-kind. This consists of meat from waterfowl, moose, grouse and ptarmigan. It is estimated that this activity provides 2½% of the total community income. Table 32 lists the estimated value of country food derived from hunting by season, while Table 33 lists the estimated number of meals per household for different kinds of game.[1]

Table 32

VALUE OF MEAT DERIVED FROM HUNTING ACTIVITIES

Game	Spring	Summer	Fall	Winter	Annual
Waterfowl	$7,634	$10,180	$3,620	$ 622	$22,056
Moose	791	10,080	434	217	11,522
Grouse/ Ptarmigan	-	-	253	396	649
TOTAL	$8,425	$20,260	$4,307	$1,235	$34,227

The annual moose harvest is 25-30 animals, with a potential harvest of several more. As a result of the diversion, there will be an immediate loss of summer feeding areas, which could in turn result in a loss of a potential harvest of 10-12 animals. The longer run effects are unknown at this time.

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[1] Data presented in these tables were derived from surveys conducted by the study team.

Waterfowl staging areas along the Rat and Burntwood River will be lost after flooding. However, waterfowl using the large, open lake areas for short migration stops will not be significantly affected by flooding.

Table 33

NUMBER OF HOUSEHOLD MEALS DERIVED FROM HUNTING

Game	Spring	Summer	Fall	Winter	Annual
Waterfowl	1,388	1,851	658	113	4,010
Moose	113	1,440	62	31	1,645
Grouse/ Ptarmigan	-	-	46	72	118
TOTAL	1,501	3,291	766	216	5,774

The diversion will likely cause some impact on hunting by Nelson House residents. For example, moose has been hunted along the waterways. Because of the increase in water levels, this method of hunting will no longer be possible in some areas since many of the shorelines will be obscured by timber standing along these waterways.

In addition, the competition for game, especially moose, between local residents and non-resident sport hunters is likely to increase as a result of the project and the improved access to hunting areas provided by the Thompson-Leaf Rapids road.

(4) Forestry

During the past year, the sawmill at Nelson House was not in operation, therefore, no income was derived from this activity. However, wood is a source of fuel for approximately 154 houses at Nelson House. The type of wood used is "dry wood," i.e., dead and preferably standing timber. Assuming a $250 fuel cost per home per year, the value of the fuel wood to Nelson House is $38,500 per year and this sum accounts for 3% of the community income.

Flooded trees could provide an additional source of fuel in the winter time. However, remote communities will depend less on wood as electricity becomes available. Although electric heat is not yet available at Nelson House, new homes are being designed in such a way as to allow for the installation of electric heating. Thus, wood is likely to be less important as a future source of fuel.

(d) The Wage Economy

The wage economy was the most significant source of income at Nelson House in 1972/73. Total wages earned amounted to $744,200 or 58% of the total community income. Temporary jobs, mainly in construction, provided $595,000 or 46% of the community annual income and permanent jobs provided $149,200 or 12% of community income. A summary of the wage economy is listed in Table 34.

There are 44 permanent jobs in Nelson House. Twenty-four of these jobs are held by Nelson House residents - 17 are associated with senior governments and 7 are associated with the private service sector. The government jobs are with the school, the nursing station, the Band Office and the Manitoba Department of Mines and Resources. The private sector jobs are with the Hudson Bay store, Manitoba Hydro and the Manitoba Telephone System. A summary of permanent jobs and wages are listed in Table 35.

Some opportunity exists for additional permanent employment of local residents within the community. It is expected that government will hire more local staff in the future

Table 34

SOURCES OF WAGE INCOME

Sector	Income	Number Employed	% of Income
Resource Development			
Hydro	$470,000	40 (avg.)	63
Fur	-	-	-
Fish	-	-	-
Forestry	-	-	-
	$470,000	40	63
Government			
Education & Medical	$ 70,000	10**	9
Construction	125,000	17	17
Administration	49,200	7**	7
	$244,200	34	33
Service			
Retailing	$ 26,400	6**	3.5
Other	3,600	1**	0.5
	$ 30,000	7	4
TOTAL	$744,200	81*	100

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*Twenty-four jobs are permanent while the remaining 57 are of a temporary nature.

**Denotes permanent employment.

Source: Manitoba, Departments of Northern Affairs and Mines, Resources and Environmental Management.
Canada, Departments of Secretary of State and Indian and Northern Affairs.

Table 35

SOURCES OF PERMANENT EMPLOYMENT

Agency	Total Permanent Jobs	Jobs Held by Local Residents	Resident Income
Hudson Bay Store	9	6	$ 26,400
School	22	7	50,500
Nursing Station	5	3	19,500
Band Office	6	6	32,200
Department of Mines & Resources	1	1*	17,000
Manitoba Hydro/Telephone	1	1	4,400
TOTAL	44	24	$150,000

*Plus part time.

in its administrative and development activities. However, it is not expected that there will be a significant increase in the number of teachers and nurses resident at Nelson House.

By comparison, an average of 57 "temporary" or seasonal jobs were held by Nelson House residents. Collectively, these accounted for approximately $595,000 in wages. The jobs were associated with the Manitoba Hydro development and with government financed construction activities in the community. In addition, there was temporary employment in the fur, fishing and forest industries, as well as Local Initiative Programs and Provincial Employment Programs.

An average of 40 men were employed at the Manitoba Hydro development in the Notigi area over the past year and approximately $470,000 in wages were earned. The actual number of men employed was much higher because of the high turnover rate. (See Section (b) The Labour Force.)

It is estimated that an average of 17 jobs were provided by government activities and $125,000 in wages were paid during the year.

A major construction activity in Nelson House over the past year was the construction of a school. Throughout the year an average number of 15 men who are local residents were employed. According to the project manager, most of these men were unskilled. However, two are heavy equipment operators. The turnover rate at this job was extremely high. The project manager estimates that to keep a crew going, a labour pool of four times the number of men working at any one time is required.

Other construction work in the community was associated with government housing programs. There is an ongoing housing program for the community. To date, however, these houses have been built by outside contractors, who hire their own staff. No estimate of the number of jobs in the housing program has been made.

Workers from Nelson House generally occupied junior positions in the construction activities because of their high turnover rate and lack of skills. An employee must stick it out in a junior position before moving up to a more senior position. In addition, it is a general rule among the contractors that if a man takes time off without notice, he is fired.

Most of the men employed in the hydro development held jobs that were of an unskilled nature. These consisted of timber clearing and working for Manitoba Hydro on survey crews. The majority of men working for the timber clearing contractors were cutters while others piled and burned the bush. Only a few were heavy equipment operators.

The wages earned by such employees were quite high. One contractor estimated that the men earned up to $1,500 per month. In addition, they received their room and board at a minimal cost of $2.50 per day.

Other potential sources of work include working in the sawmill and packing fish. However, the sawmill did not operate during the past year although it is planned that it will be operating this fall. Presently, 18 men are working in the bush cutting saw logs and fence posts from the sawmill. Little opportunity exists to earn wages from packing fish. Fishermen normally pack their own fish at lakeside and ship the fish to an agent. At times one man may be hired to help the fishermen pack the fish and look after the weigh bills. However, the wages earned by this person would be insignificant compared with alternative sources of income.

Most furs are sold to the Hudson Bay Company at Nelson House. In the future, the Nelson House Trappers' Association may operate their own fur depot and will grade and send the fur to the market. It is planned that the fur depot will be opened after the fur development program becomes operational.

In summary, temporary wage employment provided 80%

of the wage income at Nelson House in the past year; 63% of this income was directly attributable to the hydro development; another 17% can be attributed to construction activities at the new school and housing at Nelson House.

It is important to note that construction income is temporary income. For Nelson House to become an economically viable community, more wage employment is required, since the growth potential of the traditional sector is limited.

Recommendation

> THAT appropriate government agencies, in consultation with local representatives, develop effective programs to place Nelson House residents in jobs at the hydro developments on the Churchill and Lower Nelson Rivers, as well as in mining and other jobs in Thompson.

(e) Transfer Payment Economy

In 1972/73, transfer payments in the form of social assistance, social security and children's allowances, made up

28% of the community income or $358,000. Social assistance payments consisted of $217,000, family allowances $60,000 and old age pensions $82,000. The social assistance payments were divided into medical, social and unemployed employables categories. Thirty-four percent of the payments were in the medical category, 39% in the social category and 27% went to unemployed employables. (See Table 36 below.)

Table 36

SUMMARY OF ANNUAL TRANSFER PAYMENTS TO NELSON HOUSE RESIDENTS - 1972/73 *

	$	%
Social Assistance:	$217,024	60
a) Social	83,769	
b) Medical	74,419	
c) Unemployed Employables	58,836	
Family Allowance	60,000	17
Old Age Pensions	81,780	23
TOTAL	$358,800	100%

*Source: Manitoba Department of Health and Social Development and Canada Department of Indian and Northern Affairs.

It is interesting to note that the increase in family allowance rates to $20/month/child has raised the community income by $52,000 annually. By comparison, net cash income from fishing and trapping does not exceed $30,000.

If the number of jobs available to Nelson House residents decreases, it is expected that social assistance payments will increase.

(f) Community Infrastructure

The community will experience substantial real property losses. There are 44 structures below elevation 815 feet which may be flooded or damaged through shoreline erosion. In addition, the access road will be flooded in two areas. For a complete discussion of these impacts see Technical Report #6, Nelson House Community Profile.

(g) Summary

The community of Nelson House is undergoing a transition from a traditional society to a wage economy. Traditional economic activities are still an important source of income for a number of residents. Generally, these people are over 40 years old and speak little or no English. For example, 70% of the registered trappers are over 45 years old and 60% of the labor force between the ages of 40 and 65 cannot speak English. This group would find it difficult to enter the wage economy, especially if the jobs were located outside the community and required new skills. In addition, many prefer to remain in the traditional economy since they have earned a livelihood by these means for most of their life.

On the other hand, traditional activities cannot be expected to provide a major source of employment and income to Nelson House in the future because of their limited growth potential. For example, the potential cash from fishing is $40,000 gross or $27,000 net and the highest earnings from trapping occurred in 1968/69; approximately $105,000 in gross earnings and $42,000 in net earnings. Total maximum net cash earnings from fishing and trapping are not expected to exceed $70,000. By comparison, 24 permanent wage jobs located in the community are a source of approximately $150,000 in income.

In addition, only a small percentage of younger persons in the labour force are expected to depend upon traditional activities for their livelihood. This is partially due to the fact that cash returns from the traditional activities are low. At the same time, the availability of television programming, road access to Thompson, and telephone and electric service, is providing knowledge and access to a wide variety of consumer goods. As a result, there is an increasing need for the cash income required to purchase such consumer goods.

Similarly, the wage economy may not be able to absorb the number of local residents seeking jobs.

The temporary construction jobs will end within two years. School construction is expected to end in the fall of 1974, and the construction activities at the Notigi site are expected to end in 1975. The wages from hydro development were earned mostly from timber clearing activities which absorbed a large number of unskilled workers.

The construction of the Notigi control structure will employ a greater percentage of skilled tradesmen and fewer labourers than timber clearing activities. Timber clearing activities will end in April of 1975.

In the longer term, provision of wage employment related to the skills of the Nelson House work force must be increased if the Nelson House economy is to expand. Some opportunity exists for employing the men at the Inco Mines. The feasibility of a commuter operation between Nelson House and Thompson should be investigated further. More significantly, two to three thousand jobs will be available over the next 15 years in the Lower Nelson River hydro developments.

Job placement and training programs related to these developments have the potential for making a significant impact on wages earned by the Nelson House work force. Such programs should be incorporated into an employment strategy for northern Manitoba.

The impacts of the hydro development have been viewed within the context of the economic profile of the community.

First, cash income derived from traditional activities is only 2% of the total community income. Income-in-kind accounts for another 12%. The diversion of the Churchill River will probably not have a major impact on the traditional activities. However, the majority of those who take part in the traditional activities are those who will find it difficult to take alternative wage employment (most are over 40 and cannot speak English).

Recommendation

> THAT opportunities to carry on traditional pursuits be maintained for those who choose to earn their livelihood in this way.

Secondly, the income derived from wage employment accounted for 58% of the community income. Eleven percent derived from permanent jobs and 47% from temporary construction jobs. Of the 47%, 10% was earned at construction jobs located in the community and 37% was earned outside of the community at the hydro development project. These facts suggest that the Nelson House workers are willing and able to work outside of the community. However, within two years such jobs will no longer be available. An opportunity exists for government to assist this labour force to find alternative work.

Recommendation

> THAT appropriate government agencies, in consultation with local representatives, develop effective programs to place Nelson House residents in jobs on the Churchill River and on the Lower Nelson River, as well as in mining and other jobs in Thompson.

3. THE SOCIAL SYSTEM

(a) The Social Profile

It is important that the reader understand the rationale for the approach taken in presenting the Nelson House social profile.

For a discussion of this rationale, see p. 186 f.f. and p. 70 f.f.

(1) Knowledge and Beliefs

To understand what a community knows and believes, for example, about developments that will have (or are having) an effect on change, is to gain insight into:

- the community's sources of information, the channels of communication within the community and with the world outside,

- the degree of community information - whether it is specific, general, or non-existent - regarding certain changes, the impact of that change, etc.,

- whether the community can be expected to participate meaningfully in change on the basis of the knowledge it has, and

- what media of communication an external agency should use in getting information into the community and how communication within the community can be facilitated.

The knowledge and beliefs which are prevalent in a community are a product of the quality and quantity of information received by the community and how effectively it is disseminated through the community.

(i) Receiving Information

Regarding hydro developments the community of Nelson House has formally received information from a variety of outside sources:

- A series of community meetings, with Hydro representatives, with study personnel and with provincial agency people, provided general information regarding hydro development and some specific information regarding water level changes and some of the effects of these changes.

- Short presentation on native communications in Thompson introduced the interview team - including some general background information regarding the study team but providing no information about hydro *per se*.

-A one hour television program (Twenty-four Hours) outlined the background behind the Churchill-Nelson Rivers development controversy. This program was general, and so provided no specific information about hydro related changes at Nelson House.

-The Amisk Newsletter is geared specifically to events along the Churchill and Nelson Rivers.

-General news on both radio and television provided additional information.

(ii) Disseminating Information

Given these attempts at providing information, it is surprising, but revealing, that local people consider the radio their prime source of information re hydro development, yet radio has not been used to disseminate objective, factual information.

Other major sources of information about hydro developments have been informed individuals in the community (such as the Chief and Council and more recently the hydro committee), Band meetings, meetings with agency people, and television.

In summary, Nelson House information tends to be disseminated by word of mouth. In dealing with a complex issue of a technical nature, such as the hydro developments, the word of mouth procedure and the reliance on memory is bound to result in distorted information or inaccurate generalizations. (For a summary of information sources for various issues, see Table 37.)

Beliefs arise out of the receipt and processing of information. If beliefs about a particular issue, e.g., hydro development, are consistent with the best known information about that issue, then the information process is and has been an effective one. In cases where beliefs are inconsistent with available knowledge, the problem becomes one of information-education. There are a number of prevalent beliefs in Nelson House. For purposes of evaluating the information process, each of these beliefs is compared or contrasted with the best available information.

1. The fear expressed by residents that after the hydro developments are completed, their livelihood will be destroyed through the loss of their trapping and fishing. Studies indicate that although there will be some resource disruption, it will be less severe than the community believes.

Table 37

NELSON HOUSE INFORMATION SOURCES

ISSUES Source of Information	LOCAL EVENTS		PROVINCIAL OR NATIONAL EVENTS		HYDRO DEVELOPMENTS	
	A Source	Prime Source	A Source	Prime Source	A Source	Prime Source
Formal Communications						
Radio	N. A.*		31	19	24	16
T.V.	N. A.		18	5	10	4
Printed Material	3	0	6	0	3	1
Notice Board in Bay	15	2	N. A.		N. A.	
Meetings (Band, Agency, etc.)	15	4	19	3	17	6
Informal Communications						
Visits Outside	N. A.		4	1	8	2
Informed Individuals in Community	11	4	15	5	18	7
General Discussion with Friends	33	20	N. A.		N. A.	
Regular Chit-Chat in Bay Store	19	4	N. A.		N. A.	
Regular Chit-Chat in Band Office	5	1	N. A.		N. A.	

*N. A. = Not asked and/or not relevant.

For further discussion, see The Economy, pp. 232 to 252.

2. The belief that homes and buildings will be endangered through flooding or subsequent slumping. There is an indication that, if the dam designed to isolate Footprint Lake from the Burntwood River system is not built, 10 homes and 18 other buildings will be affected by flooding and an additional 7 homes and 7 other buildings could be affected by slumping.[1]

3. The belief that the wildlife will be destroyed. Research results are generally inconclusive but there are indications that there may be some disruption to moose hunting but little, if any, disruption to waterfowl.

4. The fear that water will be undrinkable due to debris and if wells are sunk as a new water source they would be far from the homes. In fact, debris does not make water undrinkable.

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[1] Manitoba Hydro.

5. The belief that residents have not been involved enough, either in the initial decision to proceed with the development or in any of the associated subsequent activities. This concern appears to have a valid foundation, since they were unaware that hydro would affect the community until late 1973.

When probed, community people generally agree that hydro development is beneficial in one respect - that of providing wage employment - though many pointed out that such jobs are of a temporary nature.

The concern over the short term nature of the jobs created is both perceptive and valid. This situation is discussed at greater length in Nelson House, The Economy, pp. 253 to 259. The other areas of concern regarding the impacts of hydro developments are generally consistent with many changes being forecast by research; however, there are wide discrepancies between the magnitude of the changes as perceived by community people and that projected by research. These beliefs or concerns arise from an expectation of the impacts based on a general description of the hydro development. The findings of reports on the environmental or resource impacts have not been a part of the information upon which such beliefs are based.

On the basis of these observations, a number of conclusions may be drawn:

1. Because information becomes distorted or generalized in its dissemination through the community, as many people as possible should receive information relating to hydro on a more deliberate or formal fist-hand basis.

2. While some individuals may have an understanding of the hydro developments, the majority of community residents have received only very general information about the project.

3. For the majority of people, the knowledge regarding how hydro development will affect their community, is not sufficient to enable them to participate meaningfully in decisions regarding change.

4. Written material is not an effective means of distributing information.

5. In spite of the efforts to date, there remains a need to deliberately disseminate digestible information and to ensure that this information

reaches both the leadership nucleus and the rank and file of the community.

(2) Values and Feelings

An understanding of basic values and feelings provides a useful insight into the social, political and economic atmosphere of a community, and the reaction of a community in the process of change.

In a transitional community, new values are emerging, often conflicting with and, therefore, adapting old values. Thus, values change with time but will occur much more slowly than technical change, for example.

Values and feelings are largely culturally determined. They result from generations of socialization and the influence of relatively new institutions, such as the church and school. They cannot necessarily be rationalized. Rather, they tend to be an intuitive "gut" feeling. Since values can give rise to views and attitudes which may be unrealistic but are nonetheless real to those who hold them, they must be recognized and respected by any interventionist.

There are some particularly strong values and feelings which emerge from a study of Nelson House:

1. A feeling which has grown in recent years has been the emerging sense of autonomy - of being more in control of decisions affecting the Nelson House community than in the past when the Indian Affairs agent made most of the decisions.

2. Community residents, particularly the older residents, who themselves did not have the opportunity for an education, place a strong implicit faith in the value of an education for the young.

3. In a community supported by a traditional economy, the extended family was a functional unit and a focal point of life. In a transitional economy such as Nelson House, the value placed on the extended family remains although its functional importance is diminishing. These traditionally strong family ties bring with them commitments which are much more strongly felt than in the nuclear family structure of industrial society. The young people growing up in Nelson House feel a responsibility to return to the community to assist their parents and grandparents. Thus decisions to out-migrate have to be made at the expense of felt

family commitments.

4. The traditional pursuits (trapping, fishing, hunting), and the associated lifestyle are still valued by many residents, particularly the older people who still live in this manner, but also the young either in sympathy for the elders or in recognition of a lost potential (commercial or casual sport).

(3) Attitudes

Attitudes are formed on the basis of knowledge, beliefs, values and feelings. Thus, they are a product of information, experience, and emotion; as such they contain a personal conviction which, like values, cause them to be very resistent to change. Once an attitude has been formed, there is a tendency to accept information and information sources which agree with a point of view, and reject those which do not.

In Nelson House, there are a number of attitudes directly relevant to the present situation and indirectly relevant to the future of the community.

1. The long history of Indian Affairs domination in community decisions and a strong value placed on community self-determinism as this emerges, have combined with many other factors to give rise to negative feelings towards governments (Federal and Provincial) and their representatives. This negativism can still be eliminated by frank, open interaction where the intentions, integrity, and convictions of personnel can be evaluated. However, such acceptance comes only after much time and repeated effort.

2. There is a general attitude of mistrust toward Manitoba Hydro. This attitude grows from feeling that all Hydro activities are undertaken solely in Hydro's best interest and that if Hydro really cared about the well-being of the Nelson House community, the diversion scheme would not be undertaken. As a result of this attitude, there is a great deal of hesitancy in dealing with both individual and community decisions regarding Hydro developments.

These feelings give rise to general fears which might be iterated by a Nelson House resident as follows:

> "If I accept settlement for damage to my physical property, e.g., trapline cabin, will that mean that I won't get anything if my trapline production goes down as a result of flooding?"

> "Hydro was telling us this (a piece of information) - should we believe them?"

> "How much is there that Hydro isn't telling us?"

> "This idea of Hydro's looks like it may be good for us, but what's in it for Hydro - because if there wasn't something, they wouldn't be offering it."

> "This idea of Hydro's looks good for us, but what are the bad points we can't think of and they probably aren't telling us."

It can be seen that attitudes like these are damaging to both sides. On the one hand, Hydro (with the pressure of its scheduling and phasing) is asking the community to hasten decisions on key issues. In an effort to assist them, Hydro is trying to provide information. On the other hand, the community is proceeding cautiously, recognizing the critical nature of these decisions, not entirely trusting the information they receive on which to base a decision, wanting to ensure the support of their community on the decision reached.

This individual and community uncertainty and the opinion that negotiations will yield more satisfactory returns if a united front is presented, has lead to the formation first of the Hydro Committee in Nelson House and subsequently to the formation of an intercommunity committee (The Northern Flood Committee) made up of seven communities which may be affected by hydro development.

The goals of this committee are to:

- Oversee and give sanction to any continuing interactions, negotiations and activities related to Hydro development which involve the communities, and

- Obtain independent legal, professional and technical expertise to assist them in getting information and advice.

3. Arising out of the strong value placed on education for the young is the attitude that better educated young adults will be able to solve the problems of supporting the ever increasing population. Many feel that with a better education the young will be able to find employment in Nelson House, others feel that educated young leaders will be imaginative enough to be able to create jobs for those who need them.

This attitude toward education as a panacea for future problems gives rise to a certain complacency which is ill founded. It is providing many residents with a false sense of security for the future, hence a lack of urgency about doing anything in terms of economic development in the community.

4. Another attitude, perhaps not as pervasive as the others but nevertheless worthy of note, is the strong sense of attachment to Nelson House - a preference to stay in Nelson

> House rather than move out to work. Many people seem to feel that the costs of leaving the familiarity and security (economically and psychologically) of Nelson House are greater than benefits which may accrue if they were to go elsewhere seeking employment. Others would be interested in moving but only if they could be guaranteed permanent employment.
>
> Young people are indecisive about where they would like to live in the future - drawn on the one hand to their family and friends and the familiarity of Nelson House, and drawn on the other hand to the "luxuries" of the industrial world which they are experiencing while going to school.

Future migration from Nelson House is likely to be relatively low and predominantly amongst the young. These young people, drawn both to Nelson House and the outside, and feeling some responsibility to the family, are likely to have intermittent encounters with the outside - returning home whenever difficulties are encountered.

Combining an attitude of future security through education with a low propensity to outmigrate, one has a basis for some speculation about the future. If outmigration remains low, as it appears it will, and steps toward developing any forms of local enterprise remain minimal or non-existent, there will be a very high rate of unemployment in Nelson House. This will either a) force people to move out at the expense of the value placed on family ties or b) choose to remain in Nelson House existing on a transfer economy in spite of the raised expectations acquired through education. If trends stay the same as at present, either of these results will bring much psychological stress - particularly to the young adults in the community.

(4) Leadership

In a traditional community gathering its livelihood from the land and living in relative isolation from outside services, the social and political structure tends to be simple and functional. People live in extended family groupings, each one looking to its family head for leadership. When a number of these families are living together as a community, it is customary for one or two families to gain more influence than the others. The heads of these families tend to become the dominant leaders in the settlement. In this situation, leadership is concentrated among very few older patriarchs in the community.

In order to determine the present leadership structure in Nelson House, a variety of opinions were solicited. The following three groups were asked to identify the leaders:

1. "outsiders" who have had [illegible]lose contact with the community [illegible]ended period of time,
2. the leaders as identified by this group, and
3. the general community - the rank and file.

The resultant leadership structure and the wide discrepancy of opinion - particularly between the rank and file and the "identified" leaders - gives a basis for several observations (see Table 38):

1. The rank and file of the community have a rather unsophisticated view of leadership or power. They tend to identify leaders by the

Table 38

LEADERSHIP AND POWER RELATIONS

BY FREQUENCY

	of 37 Community	Rank	of 10 Outside	Rank	of 12 Leaders	Rank
A.	34	1	10	1	11	1
B.	19	7	9	2	9	2
C.	7		4	8	9	2
D.	8	9	5	4	9	2
E.	32	2	4	8	6	5
F.	3		1		5	6
G.	0		1		4	7
H.	0		0		4	7
I.	0		8	3	4	7
J.	3		5	4	3	10
K.	1		3		3	10
L.	1		2		3	10
M.	32	2	1		3	10
N.	0		0		3	10
O.	30	4	2		2	
P.	8	10	1		2	
Q.	1		2		2	
R.	0		0		2	
S.	30	4	1		2	
T.	0		0		2	
U.	30	4	1		2	
V.	0		1		2	
W.	2		0		0	
X.	9	8	0		0	
Y.	7		0		3	
Z.	4		5	4	1	
A1.	0		5	4	0	
B1.	1		4	8	0	

positions which they hold rather than their ability to influence. As a result, rank and file identified the Chief, and members of the Band Council as the main leaders in Nelson House.

2. The "identified" leaders had a more sophisticated view of leadership. It appears that they were more able to identify those who have most influence in reaching community decisions. In this case, the Chief and three or four other influentials were mentioned most frequently, but not the members of the Band Council.

3. The political system in Nelson House is in a process of modernization from the traditional system. Leadership still tends to revolve around a relatively few people but this leadership base is broadening in recent years as more organizations or committees are formed and gain in confidence and in strength.

4. Also, the value which older people place on education has resulted in a growing confidence in young people because of their higher educational attainments. As a result, leadership in Nelson House is strikingly young and these young leaders are given implicit support by the rank and file.

The combination of these processes of change and the low level of political sophistication of the rank and file provide suitable conditions for the development of a power elite. However, and much to the credit of Nelson House leaders, it appears that instead of concentrating power in an elite, they have made a conscious effort to maintain an input from the rank and file in community affairs and to create new committees which allow the development of more leaders and a broadening power structure. This point is demonstrated in both the discussion on decision-making and in the latter discussion on organizations.

(5) Decision Making

Looking at the history of Nelson House, three eras of decision-making can be identified.

1. In the distant past, in Nelson House, as in other similar communities, leadership was achieved by reputation. People were not elected to formal positions nor were they given specific guidelines, rules and parameters upon which to exercise the authority of their position. As a result, the exercise of the power and privilege associated with leadership was usually subtle and indirect. This indirect leadership influence resulted in a slow process through which community decisions were postponed or delayed until a concensus was reached. The concensus decision-making process proved both advantageous and appropriate; advantageous in that it was an effective method of preventing or managing conflict and turmoil in the community; appropriate in that the decisions required were of a local nature and few in number.

2. Next came a period when agency people came to the community requiring decisions which contained a new component, the external agency. In many cases, unfamiliar with the working of the agencies and the

types of decisions asked of them, community people deferred to the opinion of the agent.

3. In the past five to ten years with the changing policy of the Indian Affairs Branch and the increasing awareness of community people, decision-making concerning local affairs has returned to the residents of the community.

In Nelson House, the type of decision-making which has been adopted is not the traditional concensus approach, but is still time consuming in that it involves a heavy input of general public opinion. Issues are raised at a general Band meeting and are discussed by all who wish to speak. Following this process of public debate, the Chief and Council make their decision on the issue. Thus, while the Chief and Council makes the final decision on most issues, their decisions are based on hearing opinions of those who attend Band meetings.

Community people are pleased with this greater involvement in decision-making and, as a result, feel that people have more commitment to the decisions now than ten to fifteen years ago.

The major conclusion to be reached from this discussion is that public involvement in the Nelson House decision-making process is time consuming but results in a high degree of commitment to decisions reached.

(6) Organizations - Horizontal/Vertical Linkages

A number of formal organizations and committees have emerged in Nelson House in recent years, some to supplement and assist the role of the elected leaders (Chief and Council) and some to assist in the operations of other community institutions. There are at present five such committees which operate on a continuing basis and a further two which are organized around annual events or needs.

A number of these committees have gained much confidence and strength in recent years. While most have strong ties of trust and respect with the "outside" organizations they relate to vertically, all the committees perceive themselves to be relatively free to pursue the courses of action which they have adopted and at least half are not required to make any kind of report or justification of activities to any outside agency or individual, i.e., they are relatively free of vertical pressures and controls. However, some of these committees have rather limited or superficial terms of reference and it is difficult to predict how much of this apparent autonomy they would retain if they chose to broaden their scope. It is also the committees with limited mandate which appear to operate quite independently of other community committees.

On the other hand, there are two committees in particular which are interacting more closely with other community groups, particularly the Chief and Council, and appear to be constantly testing the limits of their responsibility and authority with a view to expanding their scope.

(i) The School Committee

When the school committees were first formed they had a rather limited authority and responsibility such as seeing that the heating and caretaking was taken care of. However, in recent years, the Nelson House School Committee has gradually developed a more responsible position including the hiring (and firing) of principals and teachers. This progress has been achieved as a result particularly of the initiatives displayed by the local school committee in wanting more responsibility but also the policy and assistance of Indian Affairs in allowing and helping this process to take place.

(ii) The Hydro Committee

This committee has been formed to deal with hydro developments as they concern the community of Nelson House. The formation of this committee and its subsequent activities are solely the result of local initiative and its terms of reference have been determined by the committee in co-operation with the Chief and Council.

The Chief and Council, which is the supreme formal authority in Nelson House decision-making, has begun to work with these committees and to delegate responsibilities to them on issues within their mandate.

In summary, in recent years the community of Nelson House has begun to adopt and utilize the formal committee process for "getting things done." While this process is still in its formative stages, it serves as indication that there is an increasing horizontal integration within the community's institutional structure.

(b) Social Impact

(1) Operational Definition

As stated earlier, the elements and processes in a social system are interrelated and, therefore, change in one component will result in subsequent change in other sectors. Nelson House is a community in the process of change, in a transitional state between the traditional economy and the wage economy. Accompanying these changes in the economic sector are changes in the social system.

The situation which faces the community now is one of continued change, but change at an accelerated rate due to the existence of hydro developments.

The social impact is the stress which is placed on the community's social system when it is not able to adjust to change as quickly as that change is occurring.

(2) Discussion

A community must develop new ways of doing things in order to be in control of change, especially when the change is inevitable and even imposed. Some changes are relatively easy to achieve. For example, when a utility changes water levels, other inherent physical changes, environmental changes and economic changes follow naturally even though they may be resisted. Similarly, it is easy to effect changes in a community communication system, e.g., when a community suddenly has access to telephones and television, or in a community's transportation system, e.g., when a road comes to the community or a community gets an airstrip and scheduled air service.

However, the rate of technological change is invariably more rapid than cultural changes involving change in perceptions, beliefs, values and social structures. Therefore, resistance to technological change is inevitable. When technological change proceeds despite this resistance, pressure is exerted on the elements and processes (the social system) of the community.

The ability of a community to cope with change and the stress inherent in change[1] will depend largely on a community's autonomy and viability, taken together to mean the capacity of a community to function effectively on a self-determinism basis, i.e., to perform independently the economic, socialization, social control, social participation and mutual support functions.

In summary, social impact in a community is inversely related to the degree of control over change which the community can exercise. However, due to the interrelatedness of the components of the social system, social change cannot be viewed as proceeding along a fixed course to a fixed destination and, therefore, social impact cannot be predicted in terms of specific "happenings" or effects.

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[1] For a detailed analysis of the social stress which accompanies rapid change, see Technical Report #1, Social Change and Stress: A Focus on Northern Development.

The difficulty of predicting specifics and the premise that impact is related to community autonomy and viability gives rise to the need to assess the elements and processes of the community in terms of the level of autonomy which they appear to represent. This approach will:

1. provide useful baseline data for future monitoring, and
2. indicate the kinds of inputs which may be necessary to assist a community caught up in the dynamics of change to cope with the new situation.

(3) Impacts on Elements & Processes of the Social System

(i) Knowledge (About Hydro Developments)

While some individuals in the community may have a sufficient understanding of the impending hydro developments, the community as a whole does not. Furthermore, the implications that the hydro developments will have for Nelson House are even more poorly understood.

Information has reached the community from a number of sources but it has arrived in "bits and pieces" rather than as a complete, comprehensive package. Furthermore, much of the information has been in a form which may be digestible to a few but not to the majority.

In terms of disseminating information throughout the community, written material is not used by the residents. The "word of mouth" procedure, which has served to replace the written word, tends to either distort or generalize information of a complex, technical nature such as information about the hydro developments and its expected impacts.

At the present time, as a result of the lack in both quality and quantity of information, the hydro development is having a psychological impact on individuals and collectively a socio-psychological impact on the community in terms of the uncertainty of not knowing what will happen and a resultant, almost fatalistic, fear of impending doom. This feeling is also placing unprecedented pressure on the community's leadership to provide answers to people's fears. In their attempts to get information, these leaders have been confronted with a confidentiality issue around Study Board reports. This withholding of information, though well intentioned, creates fears and mistrust in the minds of those who do not have access to the reports.

Recommendations

1. a) THAT at the discretion of and in consultation with the Northern Flood Committee and the Nelson House Hydro Committee a two-way information-communication process be set up with one person specifically charged with the responsibility of:

    i) assisting the community in acquiring the kinds of information which it requires,

    ii) assisting the community to interpret this information, and

    iii) assisting the community to disseminate this information to a broad spectrum of the community.

b) THAT to facilitate a), at the discretion of the Northern Flood Committee and the Nelson House Hydro Committee, a local person from the community may be hired to assist the agency person cited above.

c) THAT to facilitate the dissemination of information, the most appropriate mechanism would be to create an interest or awareness in the community through radio broadcasts on native communications in Thompson and on Thompson radio and followed by a series of community workshops. (Resource people with a thorough knowledge of the hydro developments and its impacts should be used to facilitate a more rapid information exchange.)

2. THAT to reduce the mistrust and assist in information flow, all reports resulting from the study process be made available and that in cases where the information is tentative and/or subject to change that fact be indicated, but the information not be withheld.

(ii) Leadership

The leadership of Nelson House tends to be concentrated primarily among the Chief and Council, the Hydro Committee, the School Committee and a few professionals who are native to the community. This leadership structure is broadening as the local responsibilities of the community increase. Leadership is generally young - a result of the community's deference to the higher education and greater understanding of the "outside" world which the younger people have had the opportunity to acquire. Leadership is viewed primarily by role rather than by reputation. As such it is much more subject to change than the traditional system as new leaders may emerge to take charge of new situations and others may be changed through the election process.

(iii) Decision Making

The current leadership is very sensitive to the process by which decisions are reached both within the community and within agencies which relate to the community. Local decision-making is based on the principle of public involvement (opinions and concerns of the residents are heard at public Board meetings and these are considered when making community decisions). It should be recognized that this decision-making process is time consuming but results in a greater understanding of decisions reached and more commitment to them on the part of the general Nelson House public.

This same philosophy on decision-making transmits itself to negotiations with government or Hydro agencies. Leaders are very sensitive to the process by which agencies reach decisions which relate to their community. They expect to be consulted or involved in these decisions regardless of how rudimentary that decision may appear to be to agency people. Furthermore, on decisions which are of considerable importance to the community, they wish to be able to consult with community residents regardless of the amount of time that process may take or the apparent urgency of the decision to be reached.

The general northern trend toward increasing local responsibility - greatly magnified by the presence of hydro developments - is placing considerable pressure on the existing decision-making style in Nelson House. However, the Nelson House general public, who only in recent years have begun to be involved in decisions, are reluctant, consciously or unconsciously, to relinquish this input. Therefore, pressure is placed on the leadership who on the one hand receive agency pressure to hasten decisions yet on the other hand receive community pressure to utilize a slower, less efficient process. The situation of leadership by role rather than reputation furthers this pressure in that leaders are not secure enough in their own future as leaders to make, independent from community support, the quantum jump to decision-making by elected representation. Therefore, continued agency pressure on the decision-making process may either result in a continued "slow down" on the part of the community leaders or in considerable turmoil in the community's leadership structure.

Recommendation

> THAT agency people working with Nelson House -- regardless of the time or logistical pressures which they may feel -- must recognize and respect the fact that, at this point in time, the Nelson House decision-making process is time consuming.

(iv) Community Organizations

An important recent addition in Nelson House to the structure used in dealing with community affairs has been the emergence of strong committees which are being used to assist the Chief and Council.

These committees operate relatively independently of "outside" agencies (vertical linkages) and are now beginning to work together (horizontal linkages) in dealing with the affairs of the community.

(4) Ability to Cope with Change

The foregoing analysis of the Nelson House social system would appear to indicate that at the present time the community autonomy is relatively high in a traditional sense. Through the manner in which the social systems (elements and processes) have evolved in recent years, the community has advanced considerably in its capacity to control its own destiny, i.e., its viability and autonomy.

This is not to imply, however, that the community's viability is sufficient to cope with the significant change which will occur in the near future as patterns of living change for individuals and the community's social systems or patterns are caused to change accordingly. It is predicted that it is not. The community will probably require at various times improved inputs of information, improved dissemination of information, more streamlined decision-making processes and leadership training to assist leaders to use and handle these changes.

However, it is impossible to predict specific changes or impacts. Therefore, it is necessary to constantly monitor the community's social and economic situation. This profile provides the baseline data from which to monitor that change.

Recommendations

1. THAT a system of monitoring non-physical changes in Nelson House be established.

2. THAT appropriate positive social intervention be provided as the need is identified through the monitoring process.

   This could take the form of workshops for understanding, perceiving and coping with changes; problem-solving techniques; new life skills; use of information; and leadership training.

C SOUTH INDIAN LAKE

1. INTRODUCTION

(a) Location

The community of South Indian Lake is located on the Narrows between Southern Indian Lake and South Bay. It is approximately 85 miles northwest of Thompson, 80 miles southeast of Lynn Lake and 40 miles northeast of Leaf Rapids. The populated areas are scattered along both sides of the Narrows for a distance of 3 miles on the east side and 2½ miles on the west side. The community is entirely located on Crown Land. (See Figures 25 and 28).

The population of South Indian Lake is approximately 590 of which about 400 are of Treaty status.

In order to generate additional hydroelectric power, Manitoba Hydro has been issued a licence allowing the impoundment of Southern Indian Lake. This will result in a rise in water levels to elevation 847 feet above sea level (ASL) with a maximum permissible level of 850 feet ASL. Once the lake is being utilized as a reservoir, the maximum drawdown or fluctuation permitted in any 12-month period will be 2 feet. The water will begin to rise at South Indian Lake in June, 1975 and will reach 847 feet by November, 1975.

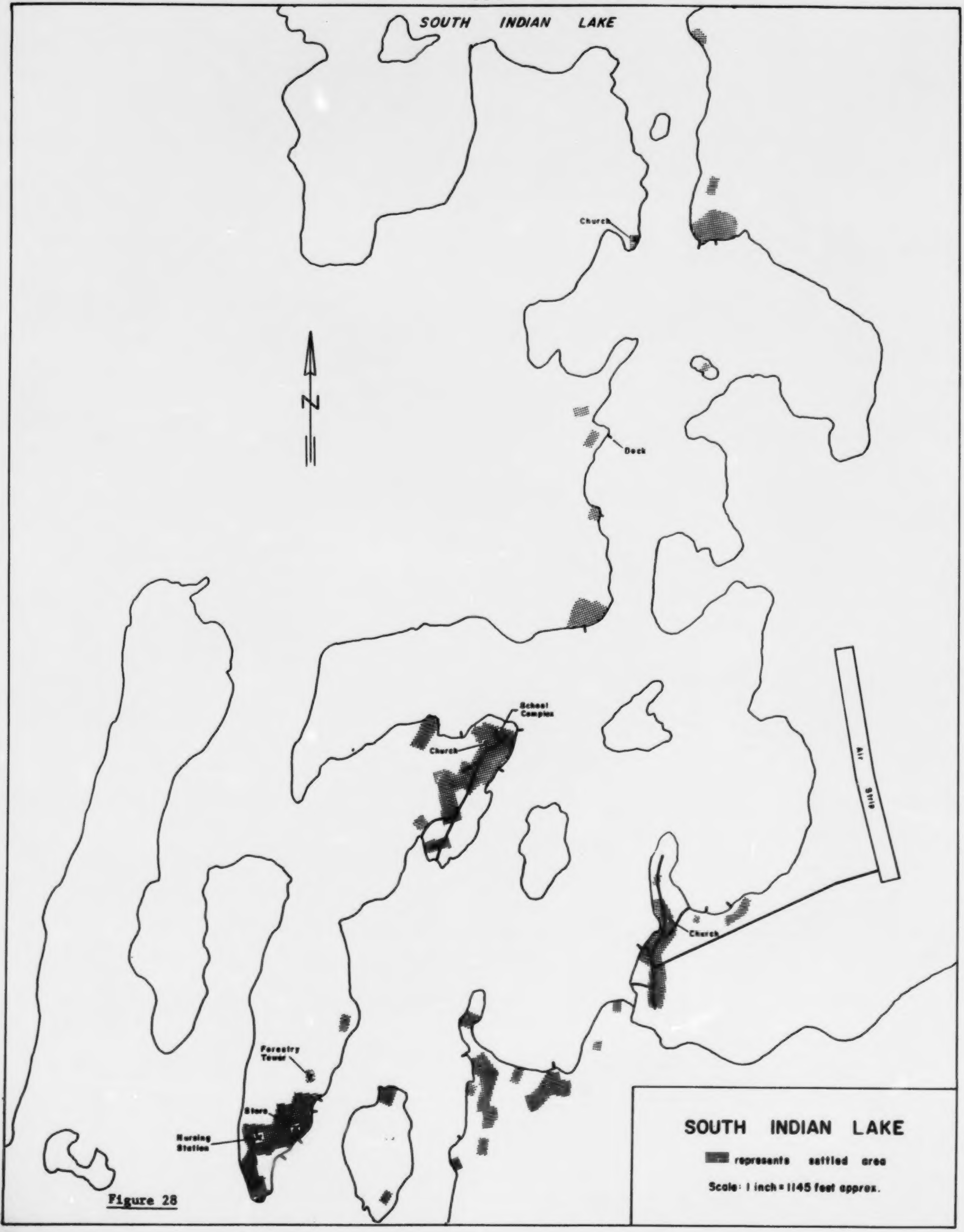
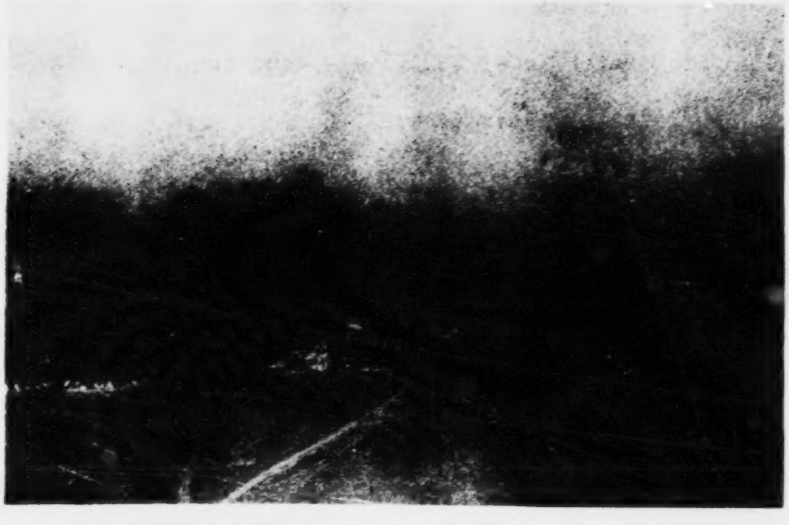

SOUTH INDIAN LAKE
N
Church
Dock
School Complex
Church
Air Strip
Church
Forestry Tower
Store
Nursing Station
SOUTH INDIAN LAKE
▨ represents settled area
Scale: 1 inch = 1145 feet approx.

Figure 28

South Indian Lake



South Indian Lake - note ice travel patterns

The project has had and will continue to have an impact on the community of South Indian Lake. A knowledge of these expected changes is necessary to assess the character and extent of such impacts.

(b) The Water Regime

(1) The Unregulated Condition

Levels

Under unregulated conditions Southern Indian Lake will fluctuate between a maximum of 843 feet ASL and a minimum of 834 feet ASL with an average annual mean monthly level of 836.5 feet ASL (See Table 39). Over an annual period the lake will fluctuate from a high water level in July (spring run-off) to a low in late winter (April).

Flows

In the area immediately adjacent to the community, unregulated flows will be negligible and will not affect transportation patterns. Flows through the Narrows are northerly from South Bay to Southern Indian Lake.

Table 39

WATER LEVELS:SOUTH INDIAN LAKE*

	Unregulated (Feet ASL)	Regulated (Feet ASL)
Maximum	843	847 - 850
Minimum	834	844
Average	836.5	847
Range	9 ft.	3 ft.

*Source: Manitoba Hydro

(2) The Regulated Condition

Levels

Table 39 indicates that under regulation the maximum water levels will be between 847 feet and 850 feet ASL while the average annual mean monthly level will be 847 feet ASL. This regulated mean level will be about 10 feet higher than the unregulated average but fluctuations under regulation will be substantially reduced (from 9 feet to 3 feet). In an average year annual water level fluctuations will not exceed one foot and cannot, according to licence, exceed 2 feet.

Flows

In the regulated condition, flows in the vicinity of the community will increase dramatically from a neglibible northerly flow to an average southerly flow of 30,000 cfs. This increase will have major implications for the community's local transportation. (For a complete discussion of this change, see pp. 341 to 343.)

2. THE ECONOMY

The following description of the economy is based on 1972 data. In that year, the community income of South Indian Lake was $543,800 while the average income per person in the labor force was $4,209.[1] The community income is presented in this report in two different but related ways: by economic activity and by types of economy. Economic activities include fishing, trapping, hunting, forestry, service and construction employment and government payments. The economy is divided into three types -- the traditional economy, the wage economy and the transfer payment economy. The combination of economic activity and types of economy describes the way of life prevalent in the community.

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[1] This excludes income of temporary residents such as teachers, nurses, etc.

It is important to note that since 1972 there have been substantial changes in the sources of community income. Although actual figures are not available, such developments as the South Indian Lake town center and increased activity at the South Bay Diversion Channel site have provided considerable wage employment. However, the resulting increase in community income over the 1972 level has been partly offset by reduced activity in the traditional sector.

In terms of economic activities, fishing provided $235,100 or 43% of community income in 1972; trapping $21,000 or 4%; hunting $41,000 or 8%; forestry $17,500 or 3%; construction $25,300 or 5%; service industries $20,000 or 3%; and government $183,200 or 34%. The government payments consisted of $35,000 in wages and $148,200 in transfer payments. Fishing and government payments combined provided 77% of the community income.

On the basis of types of economy, the traditional economy i.e., fishing, hunting, trapping and wood cutting provided 37% of the community income. The wage economy accounted for 35% of incomes (of which 60% was derived from the fishery). Government transfer payments contributed the remaining 28% in the form of Social Assistance, Old Age Pensions and Family Allowances.

Tables 40 and 41 provide a summary of the economy and hence the economic lifestyle of South Indian Lake in 1972. The data clearly indicates that at that time the community was still heavily dependent upon traditional sources of income.

The impact of the Churchill River Diversion on the South Indian Lake economy can be viewed from two different time horizons. As mentioned above, in the short run there is a major positive impact in that the level of temporary wage employment available in this area has risen. In addition, an all-weather road has been constructed from Leaf Rapids to South Bay, bringing the community to within 17 miles of the provincial road network. However, in the longer run, i.e., after the construction period, the impacts will likely be negative. There will be disruptions of winter transportation, both internal and external, due to lack of suitable ice

Table 40

ESTIMATED INCOMES DERIVED FROM ALL SOURCES: SOUTH INDIAN LAKE, 1972*

INCOME SOURCE	TRADITIONAL ECONOMY CASH	INCOME-IN-KIND	WAGE ECONOMY	TRANSFER PAYMENT ECONOMY	TOTAL
FISHING	$85,000	36,400	113,700	-	$235,100
TRAPPING	11,600	10,000	-	-	21,600
HUNTING	-	41,100	-	-	41,100
FORESTRY	-	17,500	-	-	17,500
CONSTRUCTION	-	-	25,300	-	25,300
GOVERNMENT	-	-	35,000	148,200	183,200
SERVICE INDUSTRIES	-	-	20,000	-	20,000
TOTAL	$96,600	$105,000	$194,000	$148,200	$543,800

*For sources see detailed tables concerning each economic activity.

Table 41

PERCENTAGE OF INCOMES DERIVED FROM ALL SOURCES: SOUTH INDIAN LAKE, 1972*

INCOME SOURCE	TRADITIONAL ECONOMY		WAGE ECONOMY	TRANSFER PAYMENT ECONOMY	TOTAL
	CASH	INCOME-IN-KIND			
FISHING	15	7	21		43%
TRAPPING	2	2			4%
HUNTING		8			8%
FORESTRY		3			3%
CONSTRUCTION			5		5%
GOVERNMENT			6	28	34%
SERVICE INDUSTRIES			3		3%
TOTAL	17%	20%	35%	28%	100%

*For sources see detailed tables concerning each economic activity.

conditions. Real property damage will be extensive. Wildlife habitats, particularly in the case of beaver and muskrat, will be temporarily disrupted. The fishery could be adversely affected due to possible reductions in the lake's productivity over time. A final, and perhaps most important effect, will occur in the employment sector. The disappearance of substantial numbers of temporary jobs could lead to a significant drop in community income. Unless new programs are forthcoming to ensure more employment, there will probably be a rise in the level of transfer payments and, in turn, the social and economic problems associated with such a rise.

(a) The Labor Force

The labor force is estimated by determining the number of men in the community between 15 and 65 years of age who are not attending school. (See Table 42 below)

Table 42

LABOUR FORCE - SOUTH INDIAN LAKE

AGE GROUP	NUMBER	TYPE
16 - 20	20	Mobile, trainable
20 - 40	70	Many mobile, most trainable
40 - 65	39	Not mobile, most are fishermen & trappers
	129	

*Source: Department of Indian and Northern Affairs, Human Resources Survey, 1973.

As shown, the labor force is estimated at 129, ninety of whom have some mobility and can take advantage of training programs. However, only 10 have stated that they are willing to relocate if they receive vocational training. Of these, four, are in their teens, four in their 20's and two in their 30's. Of the total estimated labor force, approximately 19% worked between 0 and 10 weeks, 19% between 11 and 20 weeks, 16% between 21 and 30 weeks, 23% between 31 and 40 weeks and 7% between 41 and 50 weeks. Only 17% of the labor force worked full time. (See Table 43, below). However, the unemployed may have spent a portion of their time on subsistence activities such as hunting and fishing for food and cutting wood for fuel.

Table 43

WEEKS WORKED BY THE
SOUTH INDIAN LAKE LABOR FORCE, 1972*

WEEKS WORKED	NUMBER	PERCENT
0 - 10	21	16%
11 - 20	24	19%
21 - 30	22	17%
31 - 40	32	25%
41 - 50	8	6%
Full Time	22	17%
	129	100%

Total weeks employment = 3,639

*Source: Derived from a sample of 91 contained in the Department of Indian and Northern Affairs Human Resources Survey, 1973.

The labor force is employed for 54% of the year while the remaining 46% is spent either in unemployment or in subsistence activities. Approximately one-half are employed less than 30 weeks and approximately three-quarters are employed for less than 40 weeks.

In terms of the sources of employment, a combination of fishing, trapping and working for wages is the means of earning an income for approximately one-half of the labor force, while one-third of the labor force earn their incomes from wages only. One-quarter earn their incomes from fishing and trapping only. (See Table 44 below)

Table 44

SOURCES OF EMPLOYMENT:SOUTH INDIAN LAKE, 1972*

CATEGORY	NUMBER	PERCENT
Employment for wages only**	41	32%
Wage work and fishing/ trapping	56	44%
Fishing & trapping only	32	24%
	129	100%

*Source: Human Resources Survey, 1973

**Wage work includes fishing for wages.

The rate of unemployment is higher for workers who rely solely on wage employment than for those who earn either all or part of their income from traditional pursuits. As shown in Table 45, below, 63% of the "wages only" category worked no more than 30 weeks during 1972. By comparison, only 53% of fishermen and trappers, and 42% of those who combined wage employment with fishing and trapping, worked so few weeks.

Table 45

EMPLOYMENT BY LABOR FORCE IN WEEKS: SOUTH INDIAN LAKE, 1972*

WEEKS	WAGES ONLY			COMBINATION OF WAGES & FISHING/TRAPPING			FISHING & TRAPPING ONLY		
WORKED	NUMBER	PERCENT		NUMBER	PERCENT		NUMBER	PERCENT	
0-10	13	31	63%	-	-	42%	8	25	53%
11-20	9	22		8	14		7	22	
21-30	4	10		16	28		2	6	
31-40	8	20		15	27		9	28	
41-50	2	5		6	11		-	-	
Full Time	5	12		11	20		6	19	
	41	100%		56	100%		32	100%	

*Source: Human Resources Survey, 1973

The labor force in 1975, 1980 and 1990 is estimated at 150, 190 and 280 respectively.[1] The present resource demand and technology would be unable to support this labor force ten to twenty years hence. The future resource demand and technology will be so different that it is impossible to predict an accurate labor balance for that era. However, it is apparent that unless an evolution of economic activities occurs, the economy will be unable to support the labor force.

This labor balance with its related underemployment provides evidence that a northern development strategy is required. The thrust of this strategy must be determined in consultation with northern communities.

(b) The Traditional Economy

(1) Trapping

Trapping represents approximately 4% of the community's income source. Of this, one-half derives from the value of the fur and one-half from beaver and muskrat meat. Table 46 outlines fur values for the five year period between 1967/68 and 1971/72. The average value of fur sold was $35,300 gross and $14,100 net. The number of individuals involved in trapping averaged 114 for that same period.

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[1] Derived from population projections contained in Technical Report #7 entitled South Indian Lake Community Profile.

Table 46

VALUE OF FUR HARVEST AND NUMBER OF TRAPPERS: SOUTH INDIAN LAKE, 1967/68 to 1971/72*

YEAR	TOTAL VALUE[1]	NET VALUE[2]	NUMBER OF TRAPPERS
1967/68	$40,900	$16,360	123
1968/69	46,700	18,680	114
1969/70	30,600	12,360	128
1970/71	28,800	11,520	113
1971/72	29,100	11,640	94
Average Values	$35,300	$14,112	114

*Source: Manitoba Department of Mines, Resources and Environmental Management

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[1] Market value F.O.B. Winnipeg.

[2] Net income to the trapper after production and marketing costs.

With regulation of the water level and the diversion of the Churchill River , approximately 22 traplines will be affected. The annual gross value of fur produced in these traplines over the past five years was $25,000 with a net value of approximately $10,000. (See Figure 29)

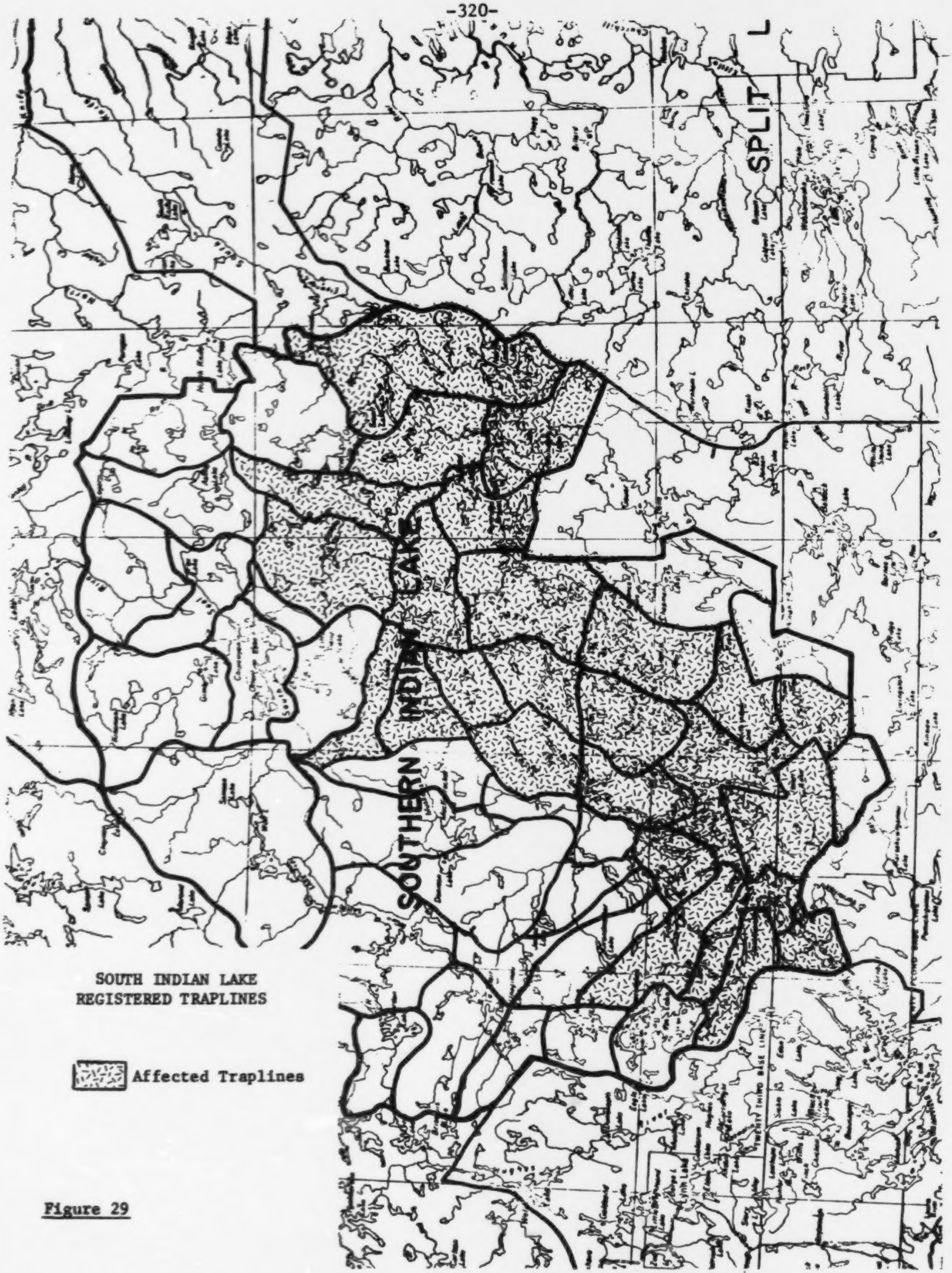
This potential loss represents 70% of the total value of the fur harvested and 59% of the total number of trappers in the community. (See Table 47, below)

Table 47

VALUE OF FUR HARVEST AND NUMBER OF TRAPPERS ON AFFECTED TRAPLINES COMPARED WITH TOTAL HARVEST AND TOTAL NUMBER OF TRAPPERS:SOUTH INDIAN LAKE*

YEAR	GROSS VALUE OF FUR*	NET VALUE	% OF TOTAL VALUE	NUMBER OF TRAPPERS AFFECTED	% OF TOTAL TRAPPERS
1967/68	$32,400	$12,960	79%	73	59%
1968/69	30,000	12,000	64%	61	54%
1969/70	20,300	8,120	66%	78	61%
1970/71	22,100	8,840	76%	68	60%
1971/72	19,800	7,920	68%	60	63%
Average	$24,920	$ 9,968	70%	68	59%

*Source: Manitoba Department of Mines, Resources and Environmental Management.


SPLIT L
SOUTHERN INDIAN LAKE

SOUTH INDIAN LAKE
REGISTERED TRAPLINES

▨ Affected Traplines

Figure 29

Based on the period 1967 to 1972, approximately 65% of the value of the fur derives from beaver and muskrat. (See Table 48). The beaver and the muskrat are the two furbearers that are water based and are most significantly affected by water regulation. However, conversations with the Department of Mines, Resources and Environmental Management personnel, as well as direct research, indicates that there are significant numbers of unharvested beaver on the Southern Indian Lake trapline section.

A report by F. F. Slaney & Company[1] indicates that impacts to furbearers will probably be severe in some areas, and that beaver production could decline by approximately 12%. Muskrat would experience a similar drop but the economic implications are expected to be less significant because this specie is, at best, of marginal commercial value. Lynx and mink may also decline but, to a lesser degree. The report specifies registered trapline numbers 1, 2, 4, 22, 24, 33, 35 and 54 as being the presently trapped lines which will be most affected. In addition, some lines which are presently not trapped will be affected thus resulting in a loss of potential production. This applies particularly to trapline #15.

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[1] F. F. Slaney & Company Ltd., Wildlife Resource Impact Assessment, Southern Indian Lake, February, 1974. Prepared for the Lake Winnipeg, Churchill and Nelson Rivers Study Board, pp. 69-73.

Table 48

FUR RETURN VALUE - ALL SPECIES:SOUTH INDIAN LAKE 1967/68 to 1971/72*

YEAR	BEAVER	MUSKRAT	MINK	LYNX	OTHER FUR	TOTAL	NET (40%)
1967/68	24,498.00	3,993.54	7,904.00	1,828.96	2,652.14	40,876.65	16,350
1968/69	26,114.00	4,171.05	10,115.00	3,649.00	2,665.19	46,714.24	18,685
1969/70	16,160.00	1,692.00	3,540.00	6,375.00	2,814.65	30,581.65	12,230
1970/71	17,304.00	2,953.75	1,672.00	4,800.00	2,049.95	28,794.70	11,517
1971/72	13,580.46	2,707.47	2,105.88	7,311.66	3,256.59	29,052.06	11,620
% OF TOTAL CATCH------	54%	9%	14%	14%	8%	100%	

*Source: Manitoba Department of Mines, Resources and Environmental Management

On the basis of the above discussion, the total actual value of fur harvest could be reduced by as much as $15,300 annually and affect as many as 30 trappers. This represents approximately 40% of total fur harvest in the South Indian Lake Registered Trapline Section for each of the years between 1967 and 1972. This figure accounts for possible disruptions to trapline access as well as furbearer productivity. It should be noted that even if this total impact is realized, this represents a very small proportion of potential productivity.

Recommendations

1. THAT trapper real property losses (traps, cabins, etc.) be replaced or equivalent cash payment made.

2. THAT provision be made for equivalent alternative and/or compensation to affected trappers for loss of income, including income-in-kind.

   Some alternatives which can be considered under this recommendation are:

a) an acceleration of the Department of Mines, Resources and Environmental Management fur program (see Technical Report #5 entitled Cross Lake Community Profile for details.)

b) provision of alternative community recreational facilities to replace those which may be lost due to disruption of the community trapline,

c) the acceleration of job training programs to provide opportunities for those residents who stop trapping due to development related impacts, and,

d) relocation of trappers to areas not affected by Hydro development.

(2) The Fishery

Commercial fishing at South Indian Lake started in 1942. At that time frozen fish were marketed. In 1943 the first fresh fish were shipped out by aircraft. Prior to the start of the commercial fishery at South Indian Lake, residents depended upon trapping for cash income. The initiation of a commercial fishery brought economic stability to the community and was its single most important economic development. In the early years, fish companies brought in outside fishermen who hired some local residents to fish for them. Other residents conducted their own operations. The fish companies, outside operators and residents continued to fish the lake under these arrangements until 1969. In that year the South Indian Lake Fishermen's Co-operative was formed and the lake was fished only by residents thereafter.

In 1972, the fishery provided 43% of the total community income when income-in-kind is added to profits and wages. It is the single most important source of livelihood in the community.

In 1972, the fishery provided $85,000 in net income to fishing operators and $30,000 to hired men who worked for fishermen, resulting in a total of $115,000 from the fishing operation. In addition, the fishery provided $84,000 in wages to those involved in packing and transporting the fish. In total, the commercial fishery provided $198,700 in cash income to the community. (See Table 49) This represents 37% or over one-third of the income to the community. In addition, the fishery provided $36,400 in income-in-kind from the use of fish for domestic purposes.[1] Because the fish is shared among members of the community, all residents benefit from the supply of fish for domestic use. This supply is especially important to the elderly who must depend on an Old Age Pension in a community where the price of food is high.

Table 49

COMMUNITY INCOME FROM
COMMERCIAL FISHING:SOUTH INDIAN LAKE, 1972*

YEAR	NET INCOME TO FISHERMEN	CO-OP WAGES PAID	TOTAL INCOME
1970	$ 70,340	$32,000	$102,340
1971	$ 85,800	$43,600	$129,400
1972	$115,000	$83,700	$198,700

*Source: Manitoba Department of Mines, Resources and Environmental Management.

In addition, the Co-operative member's equity increased by $24,000 during the 1970/71 fishing seasons and by $44,000 during 1971/72. However, in the 1972/73 season the Co-operative lost $229,000 on their operations and presently require between $500,000 and $1,000,000 in grants to operate on a break-even basis.

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[1] For more details concerning this activity and the derivation of this estimate, see Technical Report #7 entitled South Indian Lake Community Profile.

Most of the community labor force is employed in the fishery. During the fishing season up to 110 men are involved in the fishing operation and up to 22 men work at the lakeside operation. In addition, with the new packing plant at Leaf Rapids, there are at least 15 men working in the packing plant, the dining hall, and transporting the fish.[1]

However, the South Indian Lake Fishermen's Co-operative is experiencing financial difficulties and its future is uncertain as a result of the $1,000,000 spent in constructing a packing plant at Leaf Rapids, purchasing a freight boat on the lake and constructing another packing station at Loon Narrows.

The 1973/74 winter season was substantially reduced due to the closure of the Leaf Rapids fish packing plant and to the availability of alternative wage employment. It is expected that a similar situation will prevail for the 1974 summer season.

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[1] Manitoba Department of Co-operative Development files.

The impoundment of South Indian Lake can affect the volume of fish harvested in two main ways -- by decreasing the efficiency of fishermen, and by increasing the hazard to fishermen imposed by floating debris.

According to a recent study[1] the impoundment of the lake will decrease the biological productivity of the lake by 10%. The quota set for the lake, taken to be the current biological production of the lake, is 1,200,000 lbs. Thus, a 10% loss in the biological productivity could result in a reduction of potential production by 120,000 lbs. However, the commercial catch over the past four years has been between 200,000 and 250,000 lbs. below the quota. This data suggests that unless fishing activities increase, a decrease in the biological production will not reduce the volume of fish harvested. However, the effect of floating debris on fishing activities and hence on fish harvests will likely be negative. In addition, fish migration patterns may be altered causing short term production losses since the fishermen will have to find the new fishing areas.

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[1] Fisheries-Limnology Investigations - Southern Indian Lake. Department of the Environment, 1974.

As a result of a recommendation in the South Indian Lake Preliminary Report, June, 1973[1] a simulation model of the fishery was prepared (see Technical Report # 4 entitled Simulation of Alternatives for the South Indian Lake Commercial Fishery). The model attempts to evaluate the effect of the above changes on the earnings of fishermen and wages paid by the fishermen's co-operative. The results of the simulation are outlined in Table 50 below.

Table 50

ESTIMATES OF FISHERY INCOME BY PRODUCTION LEVEL:SOUTH INDIAN LAKE

HARVEST	TOTAL FISHERMEN EARNINGS	CO-OP WAGES	TOTAL
600,000 lbs	$ 66,000	$ 84,800	$ 150,800
1,000,000	104,000	91,800	195,800
1,120,000[2]	114,400	94,000	208,400
2,000,000	198,700	116,000	314,700

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[1] Preliminary Report, Social & Economic Impact of the Nelson River Hydro Development (With Emphasis on South Indian Lake), Department of Northern Affairs, June, 1973.

[2] Actual production and income 1972/73 fishing seasons.

As indicated, the potential reduction could be $14,200 (the loss resulting from a reduction in harvest from 1,120,000 to 1,000,000 lbs.)

Recommendations

1. THAT compensation for real property damage resulting from debris and/or changes in the water regime be provided to affected fishermen.

2. THAT compensation in the form of cash payments and/or equivalent alternatives be provided to affected fishermen for losses in income.

3. THAT a planning process be initiated in consultation with the community and all agencies involved to ensure a viable fishery for the residents of South Indian Lake after regulation of the lake.

(3) Hunting

Hunting provides $41,000 in income-in-kind to the community in the form of meat and hides. This represents 8% of community income. From conversations with community residents it was learned that approximately 50 moose are consumed by residents each year. Each moose provides approximately 400 pounds of meat after dressing and cutting. At a value of $1.50 per pound, each moose is worth $600 and 50 are worth $30,000. The value of the hides processed locally and used for moccasins and jackets is estimated at $4,100.00.

After regulation, there may be a decrease in moose populations due to the increase in water levels and resulting decrease of browse on the shorelines. However, a more important impact on moose populations may arise from increased hunting pressure from both Leaf Rapids residents and Hydro construction workers.

In terms of domestic use of waterfowl, it is estimated that this amounts to 20 meals per family each year. The total value of this waterfowl is estimated at $7,000. The effect of water regulation on the income-in-kind derived from waterfowl is not known at this time.

Recommendation

THAT game laws in respect to hunting be strictly enforced. A more severe alternative is to prohibit hunting to non-community residents in the area surrounding South Indian Lake.

(4) Timber Clearing

Hydro is planning an on-going timber clearing program to last an indefinite number of years and to employ local residents, especially those from South Indian Lake. It is suggested that the residents of South Indian Lake be consulted regarding the areas to be cleared. At the present time an area surrounding the community and areas surrounding the fish packing stations (Camp 3, 6 and 9, Loon Narrows and the North End), seem to be logical sites. Other areas include: i) areas to provide access to the shorelines in case a storm arises and boats must head for shore, ii) camping sites for fishermen, iii) camping sites for visitors, iv) the small creek at the base of Long Point so that freight boats need not go around this point to travel between Loon Narrows, the community and Leaf Rapids. Timber from clearing activities near the community could be made available to community residents for use as fuel. The above information is being considered by the Department of Mines, Resources and Environmental Management, which is presently finalizing timber clearing requirements at Southern Indian Lake.

(c) The Wage Economy

The wage economy of South Indian Lake centers on the provision of local community services and employment generated by resource development. The 1972 estimate of community income from construction employment amounted to $25,300 or 5% of community income. At that time, five residents were employed with Manitoba Hydro and two residents with Sherritt-Gordon at Leaf Rapids. In addition, eight residents were employed with Manitoba Hydro for some period in that year.[1]

Since then a large number (exact figures are not available) of South Indian Lake residents have been employed at the South Bay construction site and in various timber clearing operations. An indication of the magnitude of this employment is the difficulty which the fishermen's co-operative has encountered in retaining local fish packers and fishermen in the past year. This high level of hydro related job opportunities is expected to continue until mid 1975. However, while many jobs are available, there is little evidence of local people acquiring transferable construction skills (e.g., heavy equipment operators, drillers). Following the intense construction activity there will be a few long term but seasonal job opportunities available under Manitoba Hydro's reservoir management program.

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[1] Manitoba Department of Northern Affairs files and Manitoba Hydro.

Local private service industries are minimal. The Hudson Bay Company is the major retail outlet; it employs a housekeeper and 4 to 5 clerks with an annual wage bill of approximately $20,000. There is potential for growth in the private community services sector but it is not expected that this potential will be realized in the near future.

However, the provision of government services has increased dramatically in recent years. On-going services such as health, telephone, education and local administration provide approximately 15 jobs (part-time and full-time) with an annual wage bill of $35,000.[1] In addition, a large number of short term construction jobs have been generated by development of the new town center and new housing construction. Employment figures and income levels associated with these activities are not available at this time.

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[1] Information concerning employment and income levels for community services was derived from Manitoba Department of Northern Affairs files.

Future employment opportunities for this community appear to be good in the areas of public and private service industries, on-going resource development (mining and the traditional sector such as fishing and trapping) and the expansion of transportation facilities. With the increasing level of services in the community, operation and maintenance functions could provide on-going local employment for a small number of residents. The fishery will continue to be viable from a biological production point of view. However, future job opportunities in the fishery will depend upon the degree of rationalization, management competence and local initiative which is forthcoming. The other major traditional sector, trapping, is expected to continue to provide subsistence levels of income to some local residents. However, it is unlikely to be a major consideration in any future employment strategy. In addition to these more traditional pursuits, development of programs to take advantage of job opportunities at Leaf Rapids (e.g. TAWOW) could provide substantial levels of local employment. In this case, a willingness to relocate, at least on a temporary basis, would be required. The construction of an all-weather road link between the community and the South Bay access road would facilitate local labour force mobility as well as provide jobs in construction and on-going maintenance.

The above discussion outlines possible components of a local employment strategy. However, it is essential that these opportunities be developed with the concurrence and full participation of community representatives.

Recommendations

1. THAT the possibility of job opportunities in the areas of mining, construction and community services be investigated and action be taken to ensure local participation.

2. THAT the relevant Federal and Provincial agencies develop, in consultation with the community, a local employment strategy for South Indian Lake.

3. THAT, in consultation with the community, an all-weather road linking the community of South Indian Lake with the South Bay access road be constructed to facilitate employment through commuting, etc.

(d) The Transfer Payment Economy

In 1972, government provided $148,200 in transfer payments, consisting of $84,000 in payments for social assistance, $37,000 in Old Age Pension and $27,200 in Family Allowance. Of this $84,000, $72,765 went to Treaty Indians while $11,252 went to non-Treaty people. (See Table 51 for details)

On the average, 42% of the long term residents of South Indian Lake were receiving social assistance for some period of each month. The figures indicate that 57% of the Treaty Indians received some social assistance each month while only 8% of the non-Treaty residents were in this category. In terms of yearly totals for the two groups, Treaty residents received per capita social assistance payments of $185 per year while the non-Treaty residents received assistance amounting to $59.00 per capita for year. By comparison, annual per capita social assistance payments for all of Manitoba are between $65.00 and $70.00.[1]

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[1] Barber, Welfare Policy in Manitoba, 1972.

Table 51

SOUTH INDIAN LAKE
SOCIAL ASSISTANCE PAYMENTS 1972/73

MONTH	$	# OF PERSONS[1]	$	# OF PERSONS[2]	$	# OF PERSONS
	(Treaty)		(non-Treaty)		(Total)	
April	5,822	211	803	13	6,685	224
May	6,231	216	1,068	23	7,299	240
June	6,779	272	816	23	7,595	295
July	4,835	146	816	23	5,651	169
August	4,926	157	1,074	25	6,000	182
September	3,789	81	954	24	4,743	105
October	6,246	238	887	23	7,133	261
November	7,648	300	887	23	8,535	323
December	7,029	326	887	23	7,916	349
January	6,254	213	892	23	7,146	236
February	7,224	336	1,351	43	8,575	379
March	5,946	223	817	23	6,763	246
	72,765	$\bar{x}$ 226	11,252	$\bar{x}$ 24	84,017	$\bar{x}$ 250

Population Total (est.) = 590

-percent of residents receiving assistance----------42%
-percent of Treaty Indians receiving assistance-----57%
-percent of non-Treaty Indians receiving assistance--8%
-\$/capita payment - all residents-----------------\$142
-\$/capita payment - Treaty residents--------------\$185
-\$/capita payment - non-Treaty residents----------\$ 59

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[1] Department of Indian and Northern Affairs.

[2] Manitoba Department of Health and Social Development.

Social assistance payments are subdivided into health, social and unemployed employable categories by the Department of Indian and Northern Affairs. On the average, 47% of the payments to Treaty residents were made to families for health reasons, 25% for social reasons (unmarried mothers, orphans, etc.) and 28% went to unemployed employables. In the case of the non-Treaty, 4% of payments were in the health category, 53% in the social category and 44% in the unemployed employables category.

One of the myths associated with South Indian Lake is that, unlike other remote native communities in northern Manitoba, it is a self sufficient community. Contrary to this misconception, an analysis of the per capita social assistance payments to Treaty residents in South Indian Lake and a comparison of such payments with those on other reserves, indicates that South Indian Lake has the fourth highest per capita social assistance payments among fourteen remote communities located in northern Manitoba. The Cross Lake, Norway House and York Factory Bands have higher per capita payments to Treaty Indians. (See Figure 12, p. 86)

In December, 1972, 86% of the Treaty residents received social assistance. This was the highest percentage for any month during that year, while in September, 1972, only 21% of the population received social assistance. This month occurs during the period when the commercial fishery is in operation.

(e) Community Infrastructure

The level of community services available in South Indian Lake has steadily increased over the past 5-10 years. At present there are two retail stores, one school (5 classrooms), a nursing station, two churches and government administrative buildings. Recreational facilities include a community hall which can be used for movies or bingo and a sports field. Police services are limited to visits by the R.C.M.P. from Lynn Lake (20-30 per year). There is no centralized water supply or sewage system. The community now has telephone and television, both of which have been installed within the past year. Electrical power lines have recently been located throughout most of the community and service began in the fall of 1973.

All homes in South Indian Lake, other than transient resident homes, are heated by wood. It is estimated that this firewood has a value of $17,500 or 3% of the total community income.

Changes in water levels and flow will affect houses and other structures in the community.[1] The general location of houses within the community at the present time is approximately equally divided between the east and west sides of the Narrows. A new town centre on the east side is being planned by the Community Council with assistance from the Department of Northern Affairs. As part of this plan, approximately 20 new homes will be constructed this year. There is the possibility of 30-50 additional homes being constructed in the summer of 1975 or at some later date. This latter possibility is dependent upon negotiations with the community and the extent of erosion resulting from the changed water regime. Arrangements are being made, in consultation with the owners of those 20 homes presently below the 850' ASL contour, to move or reconstruct in new locations in the planned area.

Changes in water levels and flow will affect internal transportation and communication since parts of the community are separated from each other by water. The water at present is relatively still and quite deep. Under regulation, the substantial increase in flows will have an effect on summer boat travel. Until the residents adjust to this new situation, significant precautions must be taken. Winter ice conditions in the vicinity of the community will be extremely poor.[1] It is expected that there will be no safe ice crossings within 4 miles north and south of the community. This will result in severe disruption of local transportation patterns, particularly in the case of travel to and from the Bay store, the nursing station, the school and other necessary services.

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[1] Real Property Assessment - South Indian Lake and Rat-Burntwood Diversion Route, prepared for the Lake Winnipeg, Churchill and Nelson Rivers Study Board, November, 1973.

External transportation will not be as severely affected. At present there is considerable boat traffic on the lake (including fish, groceries and materials freighted by the Fisheries Co-op), an airstrip linking the community to the "outside" and a winter truck road running from South Bay to the community.

Estimated annual winter freight volume in 1972 was:

consumer goods-----------------195 tons
capital goods------------------ 20 tons
fuel---------------------------215 tons

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[1] Penner, Southern Indian Lake, Ice Cover Study, prepared for the Lake Winnipeg, Churchill and Nelson Rivers Study Board, February, 1974.

Freight rates were:

Calm Air ex Lynn Lake-----------------$.07/lb. perishables

-----$.0475-----------$.07/lb. other goods

Gardewine ex Winnipeg-----------------$.04/lb. general

Paul's Hauling ex Thompson------------$.17/gal. bulk fuel

A local resident provides an internal cartage service at the rate of ½¢ per pound.

The impact of the Hydro development on external transportation is centered around the expected higher summer water levels, debris problems and changes in winter ice condition. Higher summer levels could create navigation hazards in the short run until boat operators become familiar with new landmarks associated with the new water regime. In addition, a substantial amount of debris is expected; this will increase the navigational hazard. With the exception of the immediate vicinity of the community, ice conditions are not expected to change dramatically. Those areas which presently have poor ice conditions will remain essentially the same. However, the winter road will require re-routing in the vicinity of the community. Trails to the domestic fishing area located north of the community will also require re-routing because of poor ice conditions.

Recommendations

1. THAT the current consultation and negotiation with the community concerning replacement and/or relocation of homes and other structures be continued.

2. THAT, in consultation with the community, alternative internal transportation facilities be provided to replace the loss of ice travel in the vicinity of the community before the winter of 1975/76.

3. (a) THAT an intensive information program concerning safety hazards for ice and water levels, particularly in the vicinity of the community, be instituted immediately.

   (b) THAT in addition, a constant monitoring and updating program be established to ensure that current ice and water information is available to the community.

4. THAT compensation and/or replacement of real property losses incurred due to debris be made available.

3. THE SOCIAL SYSTEM

This section is a brief descriptive analysis of some psychological, social and political conditions which prevailed in South Indian Lake in 1973. The methodology for this section is presented briefly because it does differ from that presented in Appendix I. Material for the section was gathered from a variety of sources including:

1) interviews
2) group discussion
3) literature review
4) particularly relevant articles

The primary method of data collection was through interviews with people who know the community either through past residence or present contact on an itinerant basis. This process was adopted through deference to the residents of South Indian Lake who at the time of this research had been bombarded with a variety of researchers and other concerned individuals and agencies. The profile was checked for accuracy with the South Indian Lake Community Council.

It is important that the reader understand the rationale for the approach taken in presenting the South Indian Lake social profile. For a discussion of this rationale see pp. 186 f.f. and pp. 70 f.f.

(a) Knowledge and Beliefs

The knowledge and beliefs which people gain and form are the result of a process of sorting out, crediting or discrediting, storing, combining, rationalizing and interpreting all the information which reaches them about a particular issue. Thus, their knowledge and beliefs are shaped by the particular information which they receive, which in turn, is selected by the sources which disseminate this information. Thus, a person's outlook, attitude and opinion is partly, if not wholly, determined by his sources of information; this same process holds true for a community in general.

South Indian Lake maintains its contact with the outside through a variety of sources -- the most important sources being the news and Native Communications programs on Thompson radio. In addition to this primary source of information, the community has been receiving information relating to the flooding from a variety of other sources: i) newspaper clippings sent to the Community Council and the Flood Committee by concerned individuals, ii) the Manitoba Metis Federation News which has recently taken particular interest in northern Hydro developments, iii) by word of mouth through visits with friends and relatives from other communities, v) from meetings that some residents attend in Winnipeg e.g., public hearings, political and interest group gatherings, etc., and vi) from special information visits by Hydro and other officials.

With few exceptions, these information sources do not provide (nor are they designed, obliged, or responsible to provide) deliberate, specific, objective information. In the few instances where a deliberate attempt has been made to inform the South Indian Lake people directly about the project, the people desired and requested more information of a specific nature than was forthcoming. The assimilation of information by selective exposure has had an important part in developing the beliefs and feelings which people hold.

A few of the leaders with a penchant for details may have a fairly good idea how the proposed Hydro development will work and therefore some idea of what changes it will bring to the community of South Indian Lake. However, it is apparent that the community in general does not really know what will happen. They know that there will be flooding; they know that this flooding will have some effect upon their lifestyle. However, even the technical details which have been digested are very difficult or impossible for an individual (or community) to convert into the specific and exacting type of detail which is desired, the type of detail which is needed in order to reduce stress, worry, anxiety, uncertainty, tension and frustration.

Beliefs or opinions can be distinguished from knowledge in that they contain an evaluative or emotional component. This distinction is important; beliefs tend to be much more resistant to change because there is an aspect of personal conviction in a belief which is absent in mere knowledge. Once an opinion has been formed, there is a tendency to accept incoming information which supports this belief and to reject that which does not. It is important to realize that it is sometimes difficult for individuals to separate beliefs from facts; if he perceives something to be so, then to him, it is so. This is another factor which further reinforces a belief and strengthens its resistance to change.

Arising out of a general uncertainty about what will happen, there are a number of beliefs prevalent in the community about which they have received very little information. Some examples are:

1) Many believe that there will be a significant and lasting drop in the fish population when flooding occurs.

2) Many believe that there will be a decline in the fur bearing population.

3) Many believe that the higher water level will melt the subsurface permafrost in the areas which will become the new shorelines. If these sub-surface areas melt, extensive slumping would take place. On this basis there is the belief that the actual amount of ground area lost to the rising water will be considerably greater than would appear to be the case if one only considers the land below the 850' ASL contour.

The provision of complete information, in a form which is understandable to the majority of the community members, could serve to reduce both the distortion of facts and the general uncertainty which exists in people's minds. In cases where reports are not made available to the community, even when that witholding of information is well-intentioned, a tendency develops within the community to strengthen existing negative attitudes between the community and all those systems outside the community which the community lumps together as Government and Hydro.

Research has recently been completed[1] which, in part, serves to allay or substantiate these beliefs. If this information were made available in digestible form to community people it could help to dispel some of the uncertainty which people hold about the future and to reduce the credibility gap between the community and the agencies.

---

[1] Some of these studies are R. Hecky and H. Ayles, Summary of Fisheries-Limnology Investigations, Southern Indian Lake; July, 1974, F. F. Slaney and Company Ltd., Wildlife Resource Impact Assessment, Southern Indian Lake, February, 1974; and A. Barocos and V. Galay, Anticipated Shoreline Effects of Raised Lake Levels at South Indian Lake, Manitoba, December, 1973.

Recommendations

1. THAT to reduce mistrust and assist information flow, all reports resulting from the study process be made available and that in cases where the information is tentative and/or subject to change, this fact be indicated, but the information not be withheld.

2. THAT to ensure that these reports can be interpreted and understood by local residents, an information-communication process be established by the appropriate government agency.

(b) Feelings Concerning the Hydro Development

People are bound to have difficulty distinguishing fact from fancy. The facts which people know and the beliefs which they hold give rise to feelings. In the case of Hydro development in South Indian Lake, these feelings are directed toward the project, toward government in general and toward people whom they can associate with Hydro or Government. These feelings have been reinforced, or in some cases prompted by other processes as well.

There have been alterations in the planning of water regulation for Southern Indian Lake. Such changes have not only been extensive, they have been wrought with controversy. Arising out of this controversy, numerous people outside of South Indian Lake have developed a level of knowledge and definite opinions about the proposed development. Some of these "outsiders" have conveyed (deliberately or inadvertently), their opinions, beliefs and knowledge to the community. Many of them convey messages which agree with, reinforce and strengthen the community's position and are, therefore, "made" authorities in the people's minds.

The result of all these processes has been a bombardment of the community with a multiplicity of ideas, attitudes and "facts" - sometimes contradictory to one another The difficulty of receiving and storing all this information and of trying to sort out facts from fancy has given rise to stronger feelings of uncertainty, doubt, anxiety, fear, frustration and mistrust.

For a people who have learned the ways of nature in their physical environment, a people who have lived for generations with relatively few changes in lifestyle, the "security of knowing" has suddenly been replaced by the anxiety of not knowing -- of not knowing what is going to happen nor what the consequences of that "happening" will be on their lifestyle.

(c) Goals re the Hydro Development

These feelings of fear, doubt, anxiety, uncertainty and mistrust i.e., feelings of "not knowing" have resulted in a universal community goal to stop the flooding, to be left alone, and to maintain a traditional lifestyle which they have developed and which they know.

In June, 1973, the community's goals re Hydro development were presented as follows:

> Because they are not reconciled to the fact that flooding will indeed occur, the community has not developed any overt plan for adjusting to (or utilizing assistance in adjusting to) the necessary changes which will occur when flooding does take place. On the other hand, there is some indication that the community is not sure that flooding will not take place. In the event that it does, the community may have its own compensation plan which

> they are not disclosing lest it prejudice their position (re the flooding) either with the courts, the government or perhaps even public opinion in general.
>
> Indeed, if the flooding is inevitable, there is considerable indication that the community's sub-goals would be to get as much as they can out of the projects in three ways: i) in the form of compensation for economic declines (fishing, trapping and land food), ii) in the form of compensation for social disruptions (new houses, rink and swimming pool), and iii) to earn as much as possible from hydro work available in the area during the construction phase.

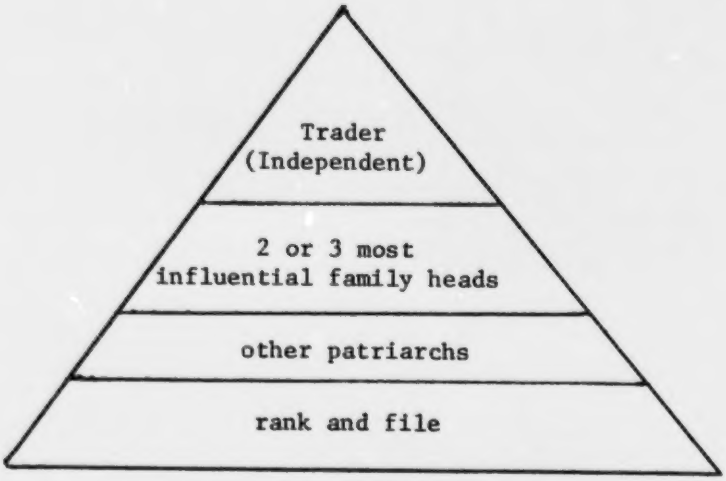
Since that writing the situation has changed twice. By the end of 1973, most of the community was reconciled to the fact that flooding would occur. However, uncertainty has once again emerged with the formation of the Northern Flood Committee and the recent indication that it may apply for a court injunction against Manitoba Hydro.

(d) Leadership and the Power Structure

In a traditional community garnering its livelihood from the land and living in relative isolation from outside services, the social structure tends to be simple and functional. People live in extended family groupings, each one looking to its family head for leadership. When a number of these families are living together as a community, it is customary for one or two families to gain more influence than the others. The heads of these families tend to become the dominant leaders in the settlement.

Another important figure in a settlement of this nature is the trader, who makes it possible for people in the community to sell their surplus products in return for staple goods. Because he is more conversant with the world outside, he is called upon to serve many other functions as well. He may be a counselling and guidance source; he refers people with particular concerns to appropriate outside agencies for help; he writes letters, completes forms, etc. for individuals; he provides liaison between residents and government agents during the latter's itinerant visits. In short, he is the go-between for most transactions with the outside world. For this reason, the community becomes increasingly dependent on the trader who becomes an integral and powerful influence in the decision-making, even though he usually remains aloof from formal decision-making structures.

The preceding paragraphs generally describe the situation at South Indian Lake up to the mid 1960's. The power structure of the community at that time might be schematicized as follows:

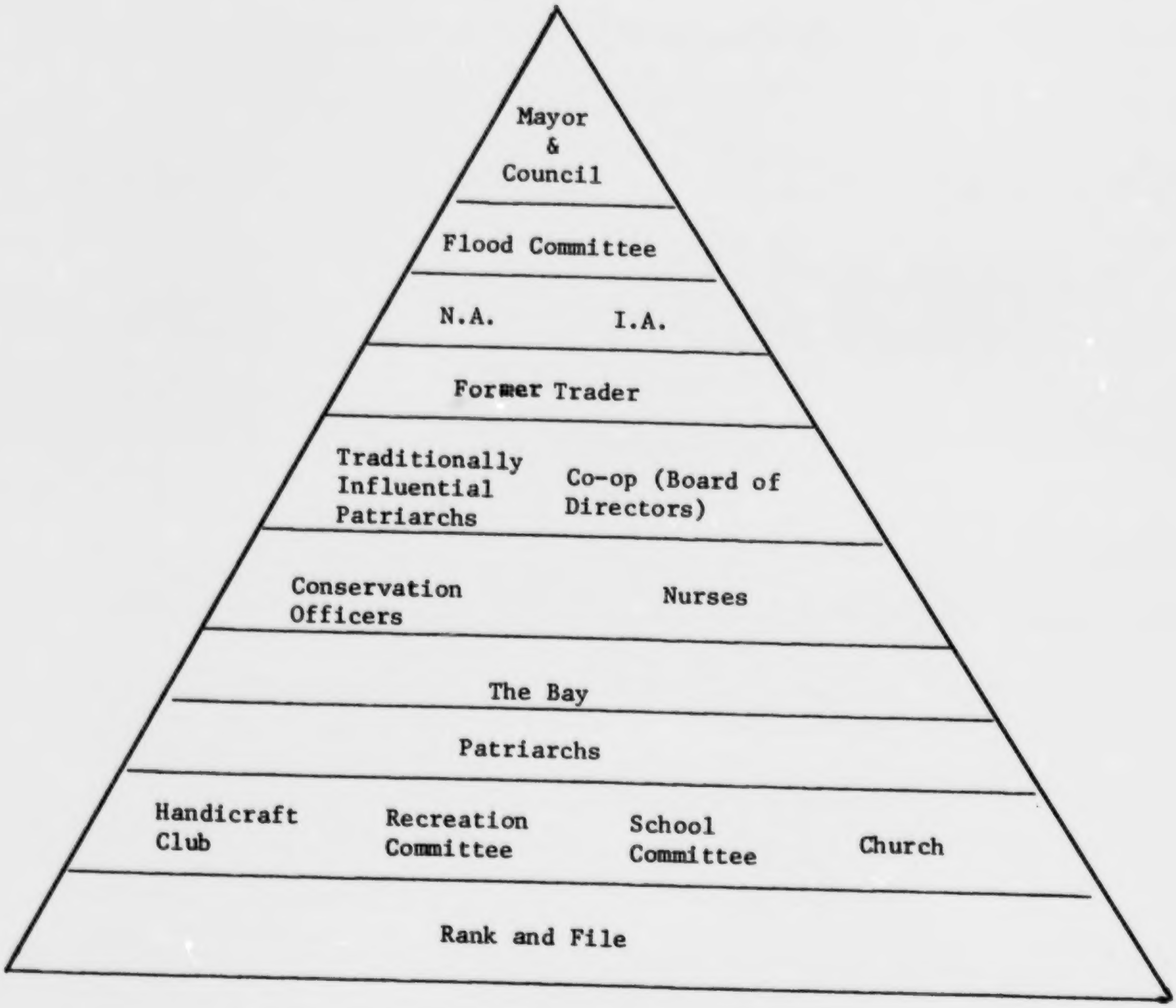

Trader
(Independent)
2 or 3 most
influential family heads
other patriarchs
rank and file

Since that time a number of factors have initiated and accelerated a process of change in both the economic and social structures of the South Indian Lake community. Although the following is by no means exhaustive, some of these factors include: the application of The Northern Affairs Act; the surrounding developments of Thompson and Leaf Rapids; the increasing accessibility through winter roads, airstrip and scheduled air flights; the commercialization of the South Indian Lake Fishery; the disappearance of the independent trader; the development of Cranberry Portage High School; the increased level of government programs and services, e.g., housing, welfare, etc.; and the Hydro development - its announcement, subsequent changes in the plan, and the beginnings of construction in the area. Many of these factors are not unique to South Indian Lake but rather are common to most northern communities which were previously isolated and are now in a process of transition.

In response to this process of change, economic and social structures become more complex. The people create institutions to perform specific tasks; they look to different individuals for leadership in different aspects of life; in effect, leadership is dispersed among more people performing more specific and specialized functions. The new institutions and leaders interact with each other to form a far more complex power base than before.

The community of South Indian Lake finds itself in the midst of this process of change. Although extended families still exist, their influence has been weakened by the increasing complexity of life. New institutions have been created in order to assist in carrying on the business and pleasure of day-to-day living. Many of these have replaced functions previously performed by the patriarchs or influencial members of extended family groups; others have been created for particular issues such as the Flood Committee which was formed to deal with Manitoba Hydro, government and lawyers in issues associated with the proposed hydro development. The most significant new institution is the Community Council. As the nature of dealings with the outside world has shifted in emphasis, the Mayor and Council have replaced the trader as the primary intermediary between the community and the world outside.

Because of the rapid changes taking place within the power structure, it is difficult to present a precise hierarchy of influence. However, there appears to be general agreement that the Mayor and Council are now, officially or formally, the pinnacle of power. There is less agreement as to where other people and institutions fit in the intermediate levels. The primary purpose in attempting to schematicize a power structure is to visually portray the vastly increased number of components which have appeared in recent years rather than to imply that the second level is more powerful than the third level.


Mayor & Council
Flood Committee
N.A.
I.A.
Former Trader
Traditionally Influential Patriarchs
Co-op (Board of Directors)
Conservation Officers
Nurses
The Bay
Patriarchs
Handicraft Club
Recreation Committee
School Committee
Church
Rank and File

Each of the components of the power structure provide some form of leadership. Generally, those in the higher echelons of the power structure wield influence beyond the realm of the specific task they perform, whereas the leadership and influence of those in the lower echelons is more confined.

The purpose of portraying in some detail the changes which have been occurring in the power structure and therefore leadership patterns in South Indian Lake are twofold:

(1) It indicates the growing influence of individuals, agencies and government departments which are external to the community. Implicit in this observation is the increased need for people within the community to interact, negotiate and reach decisions with agencies outside of the community. This is a "necessity of life" which was virtually unheard of a decade ago.

(2) It indicates the speed with which changes have been taking place within the past 7 or 8 years. The numerous changes in leadership patterns and associated changes in lifestyle have been dramatic and intense, each involving new procedures and new responsibilities for both the leaders and the community, generally. Before the people can accommodate and adjust to one change, another is in process, compounding the problems of adjustment

to the first and creating the need for further adjustments to the second.

The effect of all these processes (the information they have been receiving, the feelings, beliefs and goals which they have developed concerning the Hydro development, the increasing complexity of life and its inevitable effect on the leadership and power structures) has been to confound, frustrate and even mesmerize the community. As a result of the increased demands created by rapid change, the people have not had an opportunity to sit back and sort out information, to observe what has gone on, to decide what further changes are likely to occur and to determine what alternative courses of action are available -- in short, to consolidate their position.

(e) Decision-Making

In the past, in South Indian Lake, as in similar communities, a position of leadership was achieved by reputation. People were not elected to formal positions; nor were they given specific guidelines, rules and parameters upon which to exercise the authority of their position. As a result, the exercise of the power and privilege associated with leadership was usually subtle and indirect. This indirect leadership influence perpetuated the slow process through which community decisions were postponed or delayed until a consensus was reached.

Most decisions concerned domestic economic and social affairs -- matters which were of concern to the community itself but not to outsiders, and thus involved decisions which were made by the community or its leaders, for the community. Implicit in the "community consensus" decision-making process were two important features:

(1) consensus decision-making was an effective manner of preventing or managing conflict and turmoil within the community.

(2) the number of decisions required was few and the community could take all the time that was required for consensus to be reached.

However, as the community began to have more contact with the outside - and, as pointed out, the proposed Hydro development was only part of the cause - the decisions required became complex. These decisions were largely implemented by outsiders and therefore had to be made in collaboration with outsiders, e.g., townsite plan, housing allocation and selection of airstrip site. The decision-making technology of the community has not kept pace with the new requirements; this gap between the decisions to be made and the community's technical ability to make them, is broadening.

This results from several factors including:

1. Administrators and community people operate in two different time frames. To an administrator, an issue may require a hurried decision, either for reasons of office time pressure or because of the logistics of acting upon a decision once it is reached. Community people, on the other hand, may feel no such urgency because they do not see the issue as being that important or that urgent. The usual result of such a time conflict is that an administrator will tend to force or hurry a decision by the community which even when it is made, and has tacit approval of community decision-makers, may not necessarily carry with it a commitment to community action and follow-through.

2. The internal decisions which the community was accustomed to making revolved around matters with which they had experience, matters which they knew and understood. The

internal/external types of decisions often deal with issues or problems which are unique or new to the community; they involve administrative procedures and considerations which are unfamiliar to the community.

3. Because traditional community decisions did not involve outsiders and because there was little urgency involved, decision-making tended to be by consensus. If there were sectors of disagreement within the community, the decision would merely be delayed until such time as the conflict was resolved and consensus was achieved.

These conditions have given rise to an inadequate process for making decisions of the internal/external type. In the later 1960's, in order to try to deal with this need, the community organized itself politically and formed a Community Council. From its birth as an institution about 5 years ago, this civic body has effectively developed into the government of the community.

While the Mayor and Council have been elected by the community to deal with internal/external issues and while the community has ascribed the usual authority to these positions, the Council still tends to try to reach decisions in the traditional, community consensus manner. This process is advantageous in some instances; in other instances, time does not allow consensus to take its course, and the process is inadequate.

Given this situation and the previous recommendations in this section and the basis for them, there is an obvious need for the Community of South Indian Lake to learn new decision-making, problem-solving, communications and community life skills.

Recommendation

1. THAT the process of leadership and community life skills training which has been initiated, be continued.

D. OTHER COMMUNITIES

INTRODUCTION

There are a number of other communities and geographical areas which will be affected in varying degrees by Manitoba Hydro's power development. These include Norway House, Thompson, Split Lake, Leaf Rapids and, in connection with anticipated changes along the Lower Churchill, Ilford and the Town of Churchill. In addition, Lake Winnipeg and its adjacent communities will be affected by the Lake Winnipeg regulation project. Of the affected communities, Norway House and Split Lake can be categorized as remote northern communities, Thompson and Leaf Rapids can be viewed as recently established single industry (mining) northern communities, and the Towns of Churchill and Ilford have aspects of both these categories. The location of these communities is given in Figure 30.

The total population of these communities is estimated to be approximately 33,000.[1] Leaf Rapids and Thompson account for 25,000 people, Norway House and Split Lake another 4,000 and the remaining 4,000 reside at Ilford and Churchill. The communities bordering Lake Winnipeg have a total population of 10,000.[2] Approximately 7,700 reside in communities on the east side of the lake which can be classified as remote.

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[1] Population figures were derived from Manitoba Department of Northern Affairs files.

[2] Ibid.

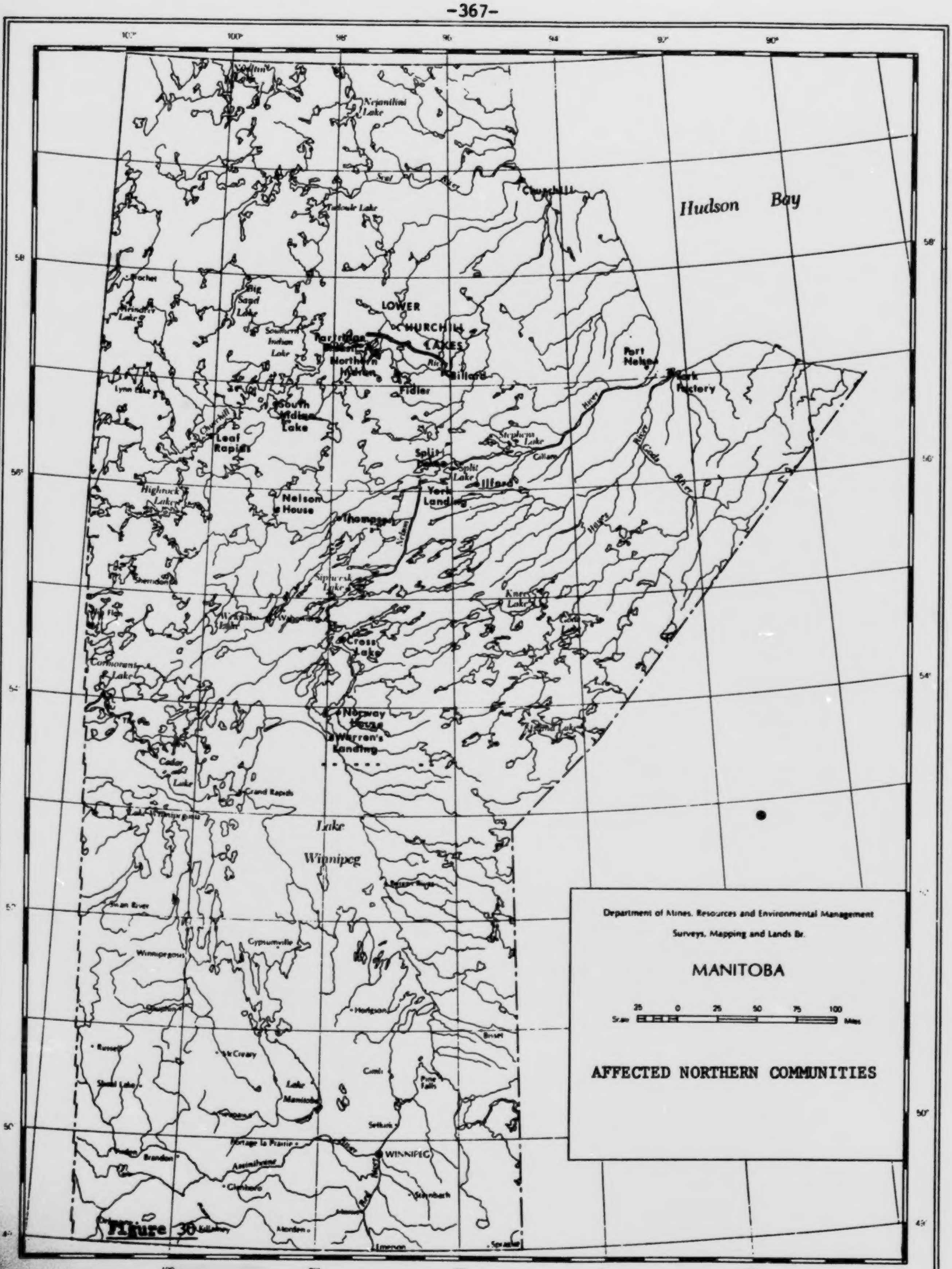

Figure 30

Department of Mines, Resources and Environmental Management

Surveys, Mapping and Lands Br.

MANITOBA

AFFECTED NORTHERN COMMUNITIES

Scale
25 0 25 50 75 100 Miles
Hudson Bay
Churchill
Nejanilini Lake
Tadoule Lake
Seal River
LOWER CHURCHILL LAKES
Big Sand Lake
Southern Indian Lake
Partridge Breast
Northern Indian
Billard
Fidler
South Indian Lake
Leaf Rapids
Lynn Lake
Port Nelson
York Factory
Stephens Lake
Split Lake
Split Lake
Ilford
York Landing
Nelson House
Thompson
Nelson
Sipiwesk Lake
Highrock Lake
Sherridon
Wabowden
Cross Lake
Knee Lake
Hayes
Cormorant Lake
Norway House
Warren's Landing
The Pas
Cedar Lake
Grand Rapids
Lake Winnipegosis
Lake Winnipeg
Berens River
Swan River
Winnipegosis
Gypsumville
Hodgson
Bissett
Russell
McCreary
Shoal Lake
Gimli
Pine Falls
Lake Manitoba
Selkirk
Portage la Prairie
WINNIPEG
Brandon
Assiniboine
Red River
Steinbach
Morden
Emerson
Sprague
Melita
Killarney
Churchill

The following discussion is an attempt to identify and analyze the impacts which may be imposed on these communities as a result of the Churchill - Nelson Hydro development. Because of the diverse nature of both the communities and the impacts, the information is presented within the context of each community and there is little attempt to aggregate the data. It should be noted that in most cases the number of individuals affected is small and the effects minor. It is therefore reasonable to suggest that social impacts in these communities will be negligible compared with those discussed in the preceding sections. For this reason, the analysis concentrates on specific issues related to economic activities.

1. NORWAY HOUSE

The community of Norway House is located on the East Channel of the Nelson River approximately 18 miles north of the outlet of Lake Winnipeg. (See Figure 31) The population is approximately 3,000 of which approximately 67% are status (treaty) Cree Indians. The population under 15 is large, approximately 47%, which is typical of most remote northern communities. The remainder are non-status Indian people with the exception of a small group of transient professional persons, mainly in the medical and educational fields.[1]

(a) Water Regime

The development of Manitoba Hydro's Lake Winnipeg Regulation Project will affect the water regime of the area around Norway House and, in turn, impose some social and economic impacts. Table 52, which summarizes the expected changes in water levels, indicates that levels will remain within the historic range but will be, on average, higher than in the past. This is indicated by the smaller range of fluctuation under regulated conditions.

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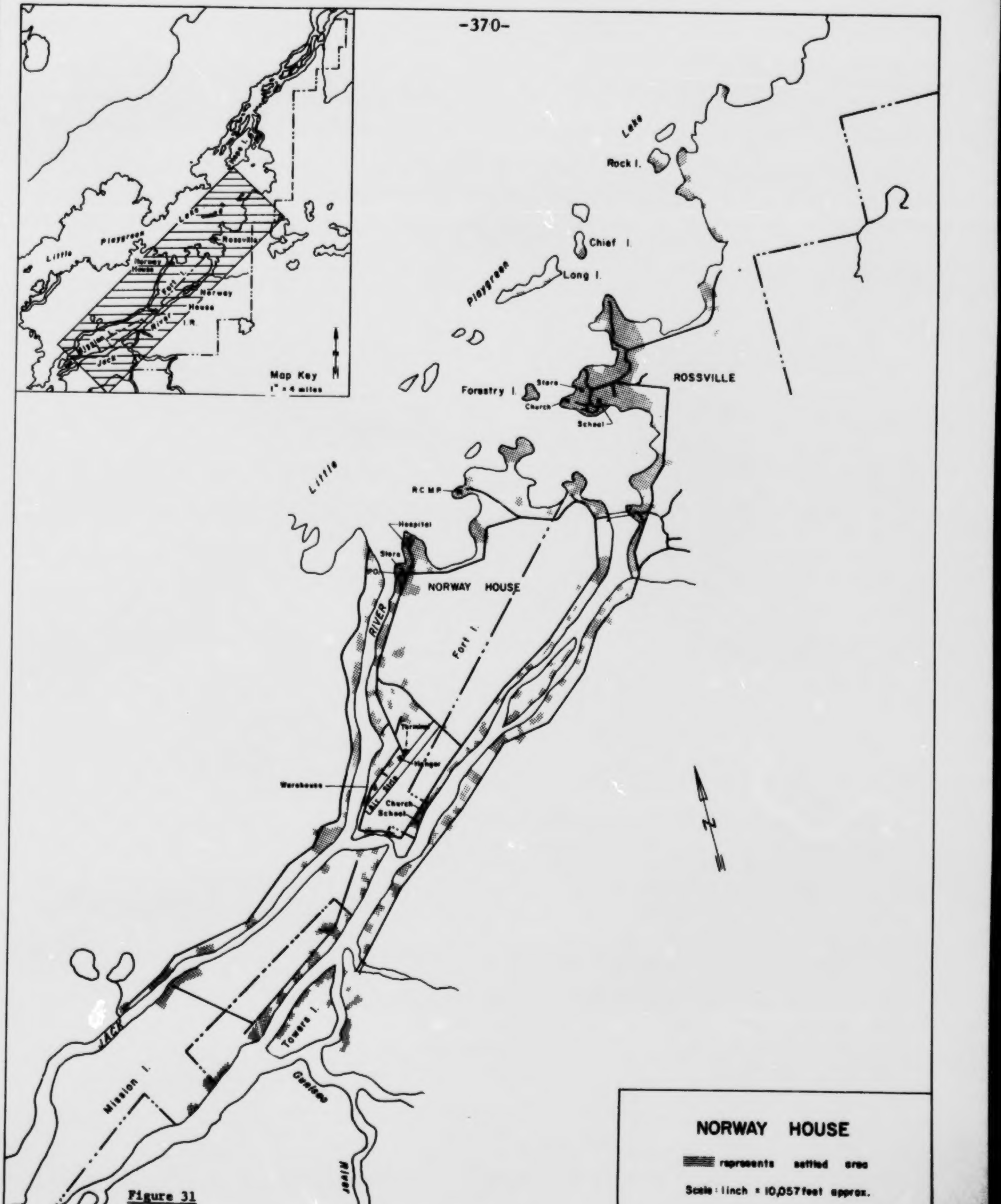
[1] Population data was derived from Canada, Department of Indian and Northern Affairs and the Manitoba, Department of Northern Affairs.


Little
Playgreen
Lake
Rossville
Norway House
Fort I.
Norway
House
I.R.
River
Mission
Jack
Map Key
1" = 4 miles
Lake
Rock I.
Chief I.
Long I.
Playgreen
Forestry I.
Store
Church
School
ROSSVILLE
Little
RCMP
Hospital
Store
PO
NORWAY HOUSE
RIVER
Fort I.
Terminal
Hangar
Warehouse
Air Strip
Church
School
N
JACK
Towers I.
Mission I.
Gunisao
River

NORWAY HOUSE

▨ represents settled area

Scale: 1 inch = 10,057 feet approx.

Figure 31

Flows in the vicinity of the community will increase after regulation.[1] In the unregulated condition, average flows on the East Channel of the Nelson River are approximately 15,500 cfs in summer and 8,300 cfs in winter. Under regulation, these flows will increase to a summer average of 18,200 cfs and a winter average of 10,900 cfs. It should be noted that increases are within the historic flow fluctuations in the area.

Table 52

UNREGULATED & REGULATED WATER LEVELS, NORWAY HOUSE*

	Unregulated (Feet ASL)	Regulated (Feet ASL)
Maximum	715.90	715.39 (-.51)
Average	711.90	713.45 (+1.51)
Minimum	706.99	710.06 (+3.07)
Range	8.91 ft.	5.3 ft.

*Source: Manitoba Hydro.

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[1] Data was derived from Manitoba Hydro simulations.

(b) Impacts

The implications of these changes on local economic activities within Norway House vary substantially by activity. The two economic activities which are likely to be directly affected are trapping and fishing. In addition, there may be disruption of the existing winter road. On the positive side, construction activity in the area has created a large number of short term job opportunities.

(1) Trapping

Trapping in Norway House continues to be a significant socio-economic activity. Table 53 indicates the value of the fur harvest and the net income to trappers for the period 1967/68 to 1972/73. The number of trappers still actively engaged in this activity has declined in much the same way as in Cross Lake. On average, 130 men annually trap in the Norway House Registered Trap Line (R.T.L.) section.[1] There are nine R.T.L. Blocks which are located within the area of possible impact. These are numbers 16, 18, 25, 26, 28, 31, 36, 39 and number 1, the community trapline (see Figure 32). The average value of production and number of

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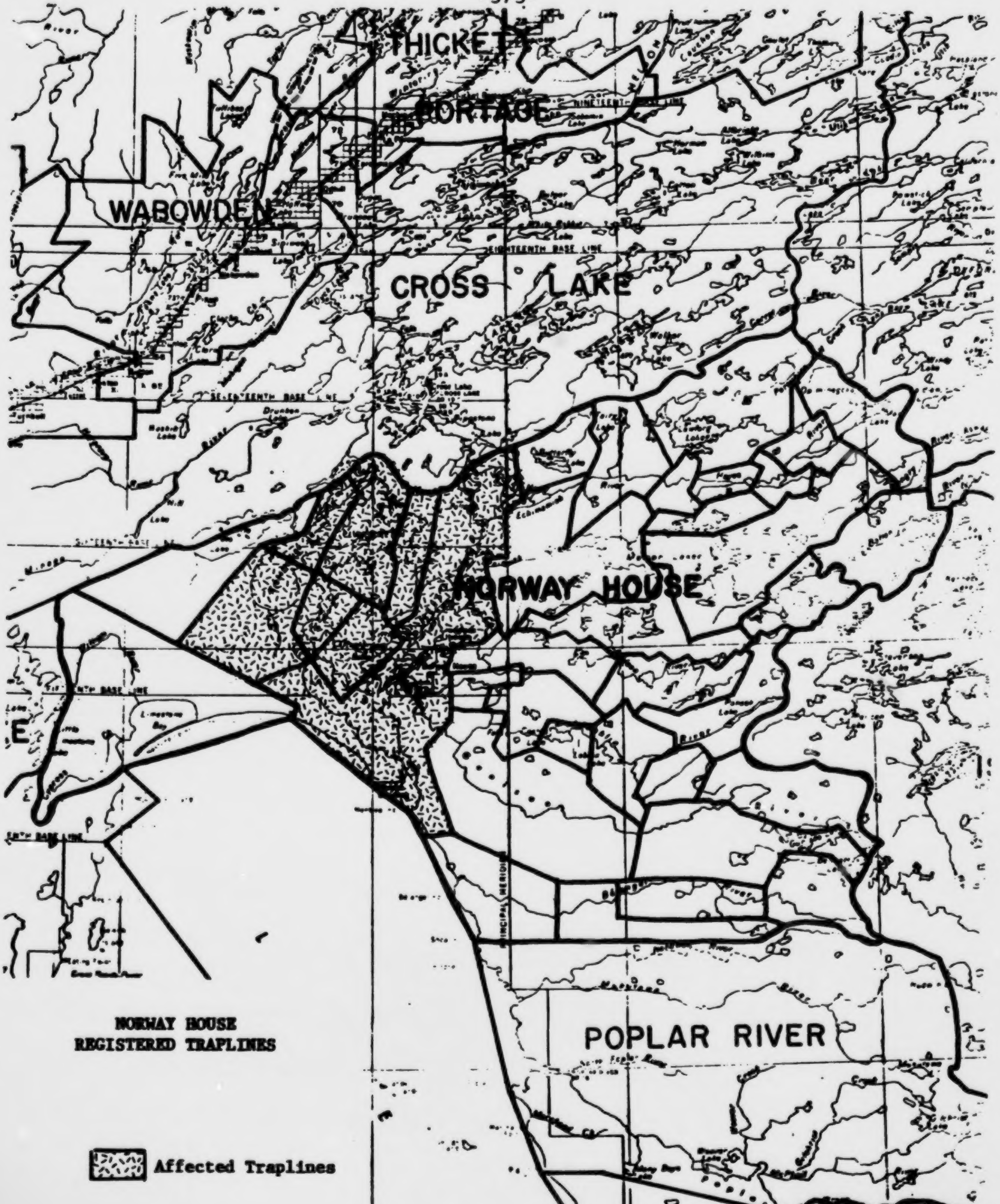
[1] Information derived from Manitoba, Department of Mines, Resources and Environmental Management files.


THICKET
PORTAGE
NINETEENTH BASE LINE
WABOWDEN
EIGHTEENTH BASE LINE
CROSS LAKE
SEVENTEENTH BASE LINE
SIXTEENTH BASE LINE
NORWAY HOUSE
FIFTEENTH BASE LINE
E
PRINCIPAL MERIDIAN
POPLAR RIVER
BERENS
▨ Affected Traplines

NORWAY HOUSE
REGISTERED TRAPLINES

Figure 32

Table 53

VALUE OF FUR HARVEST BY SPECIE
NORWAY HOUSE 1967/68 to 1972/73

Year	$ Beaver	$ Muskrat	$ Mink	$ Lynx	$ Other	$ Total Value	$ Net Income
1967/68	18,968.00	11,685.70	8,640.00	261.28	3,631.11	43,186.09	17,274.44
% of Total	44%	27%	20%	1%	8%		
1968/69	30,668.00	5,815.60	28,560.00	2,952.00	5,773.48	73,769.08	29,507.63
% of Total	42%	8%	39%	4%	8%		
1969/70	22,230.00	4,287.65	15,470.00	9,990.00	6,943.55	58,921.20	23,568.48
% of Total	38%	7%	26%	17%	12%		
1970/71	11,088.83	6,438.57	3,080.00	8,083.00	4,067.97	32,758.37	13,103.35
% of Total	34%	20%	9%	25%	12%		
1971/72	11,907.90	3,549,66	7,051.80	21,777.74	3,651.15	47,938.25	19,175.30
% of Total	25%	7%	15%	45%	8%		
1972/73	13,293.15	1,980.00	6,452.20	2,974.95	10,175.58	33,875.88	13,550.35
% of Total	39%	6%	16%	9%	30%		

SOURCE: Manitoba Department of Mines, Resources and Environmental Management trappers for this area are shown in Table 54. It is obvious that the community trapline is the most important in terms of both production and trapper utilization.

Table 54

AVERAGE VALUE OF FUR HARVEST &
NUMBER OF TRAPPERS IN AFFECTED AREA
NORWAY HOUSE - 1967/68 TO 1972/73+

RTL Section (Community Line)	Gross Value of Harvest (&)	Number of Trappers	Value/ Trapper
1	11,814.00	71	166.39
16	64.17	1	64.17
18	128.33	2	64.17
25	850.39	2	425.20
26	23.14	1	23.14
28	256.89	2	128.45
31	165.93	1	165.93
36	221.98	1	221.98
39	34.21	1	34.21
AVERAGE PER TRAPLINE	$1,506.56	9	$ 167.40

* Source: Manitoba Department of Mines, Resources and Environmental Management.

The impact on this affected area is not expected to be severe in most cases.[1] The relatively small increase in average water levels and the reduction in the range of fluctuation are contributing factors. However, in specific cases, primarily R.T.L. Blocks 25, 31, 36 and 39, where construction work has been underway for just under two years, the impacts may be more severe in the short run. After the construction period, there appears to be a reasonable possibility that fur bearers will re-establish in most areas. An exception may be trapline block 25, due to the annual fall cutback described earlier.

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[1] F. F. Slaney & Company, Ltd., Wildlife Resources Impact Assessment, Oulet Lakes Area, March, 1973 for the Lake Winnipeg, Churchill and Nelson Rivers Study.

Income-in-kind losses can be expected to be minor with the exception of the income derived from the community trapline. Here the losses can be expected to be at least as great as the cash losses from reduced production. Again, it is expected that these impacts will be of a short run nature.[1]

Mitigation of these impacts could be achieved through a number of mechanisms.

Recommendations

1. THAT trapper real property losses (traps, cabins,

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[1] Unfortunately, it was not possible to conduct a detailed survey as described in the Cross Lake section. Therefore, conclusions concerning income-in-kind and attitudes to employment are based on personal communications with local residents and inferences drawn from the Cross Lake-Nelson House surveys.

etc.) be replaced or equivalent cash payment made.

2. THAT provision be made for equivalent alternatives and/or compensation to affected trappers for loss of income, including income in kind.

3. THAT payment of compensation for income losses be made on a temporary basis until such time as post development monitoring indicates conclusively the degree of wildlife impact. It is suggested that the monitoring period be three to five years.

4. THAT provision be made for alternative recreational opportunities to offset losses on the community trapline.

5. THAT compensation and/or mitigation negotiations be conducted with the full participation of community representatives and the individuals directly affected.

(2) Fishing

The Norway House commercial and domestic fishery may also be affected. Commercial fishing is a substantial source of community income. The summer fishery on Playgreen Lake and, periodically, on other small lakes, provided seasonal employment for an average of 65 men and an average annual net income of $72,000 between 1969 and 1973.[1] The fishermen are presently organized as the Norway House Fishermen's Co-operative. The Co-op maintains packing stations on Upp[illegible] Playgreen Lake at Tait Island and on Lower Play[illegible] t Flett or Sandy Island. The main commercial specie [illegible]h, which is transported by boat to Grand Rapids and then by road to F.F.M.C.'s plant in Transcona, Manitoba. No commercial winter fishing has been undertaken in Norway House in recent years.

The impact of the Lake Winnipeg regulation project on this fishery has been difficult to define. Scientific investigation has specified two potential problem areas; a) increased sedimentation resulting in possible reductions of spawning area, and b) changes in fish migration patterns.[2] It is difficult to translate these potential resource impacts on productivity into precise economic effects. Nevertheless, there will likely be some short term disruption of commercial fishing after regulation. If migration patterns shift, there will be a period of time when production will drop while fishermen attempt to find new, good fishing areas. Further, losses in production due to disruption of spawning grounds may become apparent in the late 1970's as fish which spawn in the next year reach commercial age.

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[1] Information derived from Freshwater Fish Marketing Corporation and Manitoba Department of Mines, Resources and Environmental Management.

[2] Fisheries Limnology, Outlet Lakes Area, March, 1973, prepared for the Lake Winnipeg, Churchill and Nelson Rivers Study Board.

In the area of impacts on facilities associated with the fishery, there is not expected to be any serious problem with debris. However, the fish packing station located on Flett (Sandy) Island will be subject to more frequent flooding,[1] and will likely require relocation. Discussions with local fishermen's representatives have indicated that a possible new site could be Mission Island.

Mitigation of the potential effects described above will be necessary should the problems identified materialize.

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[1] Information received from field officers of Manitoba, Department of Mines, Resources and Environmental Management indicates that the approximate elevation of this station is 711 to 712 ft. Average summer water levels after regulation will be approximately 713.8 ft.

Recommendations

1. THAT real property losses (boats, nets) resulting from debris associated with the development or damages incurred due to the new water regime be replaced or equivalent cash payment made.

2. THAT the fish packing station on Flett or Sandy Island be relocated to ensure against future flooding, and that the new site be chosen in consultation with the Norway House Fishermen's Co-operative.

3. THAT a monitoring program to determine the actual impact of the power development on fish productivity be instituted.

4. THAT compensation such as cash payments and/or equivalent alternatives for losses of income be made available to affected fishermen.

   Final compensation agreements could await the results of the monitoring programs. However, interim agreements could be negotiated between Manitoba Hydro and the affected fishermen.

(3) Community Infrastructure

Real property damages, including transportation infrastructure, will probably be minimal. Since water levels under regulated conditions will not exceed historic fluctuations, there is only a remote possibility of property damage within the community. However, disruption of existing winter road routes may occur.[1] Preliminary indications are that there will be minor disruptions on the winter road to Warren's Landing resulting from increased flows in the vicinity of Two Mile Channel. In addition, there is a possibility of poorer ice conditions in portions of Little Playgreen Lake. This may require a rerouting of the existing winter road to Norway House with commensurate increases in costs of construction. These impacts are of particular importance because there is no other land link available to the community.

A final consideration is the potential impact of the Lake Winnipeg regulation project on local employment. The labour force of Norway House is estimated to be approximately 900 people.[2]

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[1] Preliminary data is available in Manitoba Hydro's study entitled, Interim Report on Winter Transportation in Outlet Lakes Area, August, 1973. More definitive results are expected from Manitoba Hydro by August 1974.

[2] Labour force is defined as local residents between 15 and 65 years old who are not attending school full time or are not women who are married, separated with children or unwed mothers.

Besides the seasonal employment provided by trapping and fishing, the major employer in the community is the government. The hospital, airport and general government administration provide approximately 90 to 100 jobs. In addition, approximately 50 jobs are available in the private service sector (retailing, telephone, etc.). Periodic local construction projects provide additional employment.[1]

Although there have been substantial job opportunities available due to the construction work associated with this development, there have been few Norway House residents employed on the development.[2] On average, only 5 to 10 residents have been employed at one time, although this figure has been much higher in some months. Most of those employed have been unskilled construction workers or bush cutters on timber clearing operations. The reason for the relatively small response to these job opportunities is not clear. A number of possibilities have been advanced, ranging from easy accessibility to social assistance to an aversion to working away from the community because of strong social and family ties. Whatever the reason, it is clear that Norway House has not benefited from increased employment opportunities to the same extent as other northern communities discussed in this study.

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[1] Estimates quoted in this discussion were derived from Manitoba Department of Northern Affairs and personal communications with local residents.

[2] Northern Manpower Corps, Manitoba Dept. of Northern Affairs data.

Recommendation

> THAT the appropriate Federal and/or Provincial agency undertake an examination of present and future employment opportunities in the Norway House area with a view to ensuring that future opportunities for employment are maximized.

2. SPLIT LAKE AND YORK LANDING

The community of Split Lake is located on the north shore of Split Lake approximately 80 miles northeast of Thompson (Figures 30 & 33). Its population is estimated to be approximately 1,000 of which 76% are status Cree Indians.[1] As in other remote northern communities, there is a large proportion, approximately 50%, of the population under the age of 15. York Landing, with a population of approximately 200,[2] is located 10 miles south of

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[1] Manitoba Department of Northern Affairs files.

[2] *Ibid*.

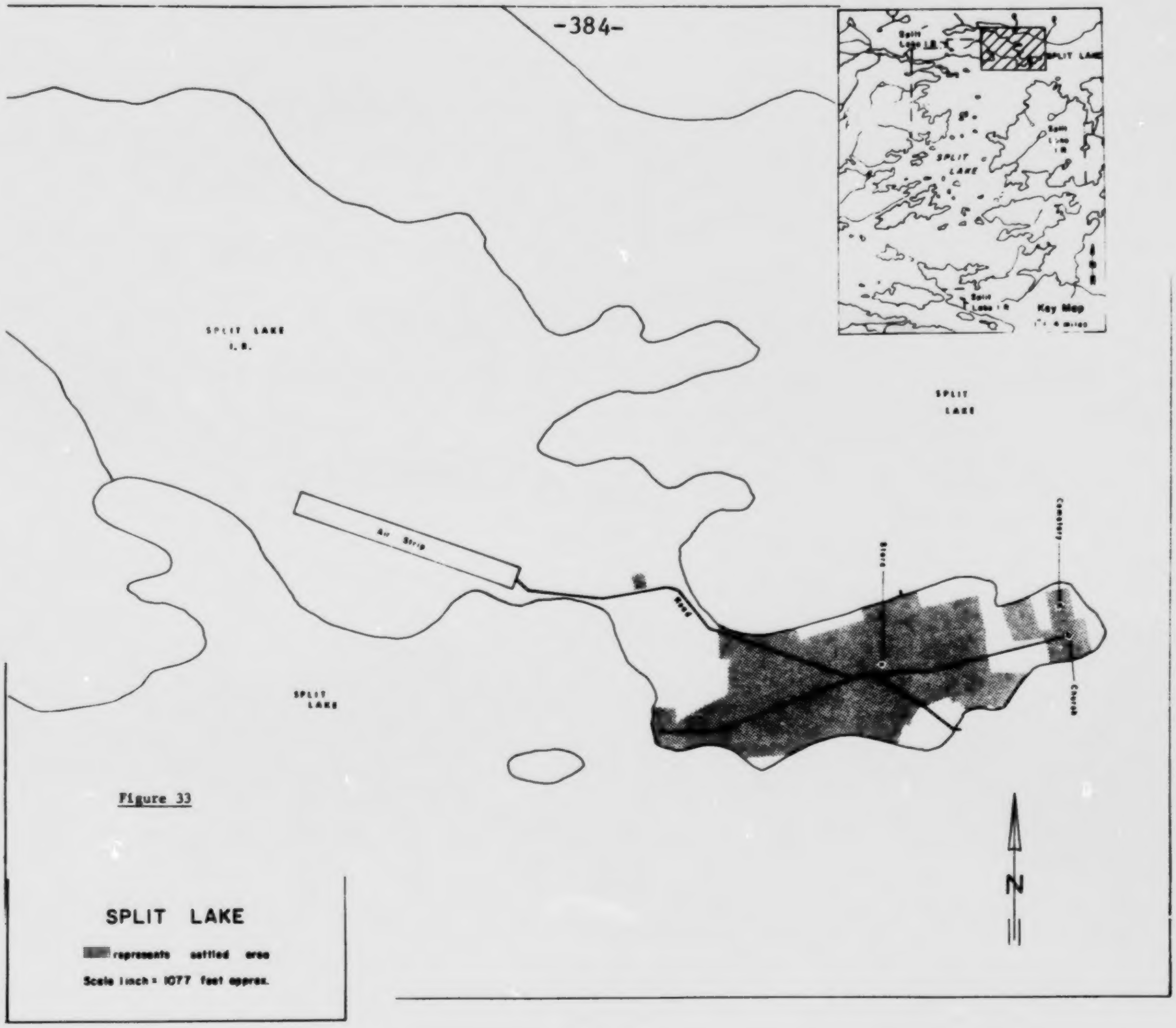
Split Lake I.R.
SPLIT LAKE
Split Lake I.R.
SPLIT LAKE
Split Lake I.R.
Key Map
SPLIT LAKE I.R.
SPLIT LAKE
Air Strip
Road
Store
Cemetery
Church
SPLIT LAKE
N

Figure 33

SPLIT LAKE

▓ represents settled area

Scale 1 inch = 1077 feet approx.

Thompson

Split Lake

the community of Split Lake on the south shore of the lake at the mouth of the Aikens River. Again, a large portion of the population is under the age of fifteen.

(a) Water Regime

The development of Manitoba Hydro's Lake Winnipeg regulation project and Churchill diversion will alter the water regime of Split Lake.[1] Table 55 outlines water level and flow conditions for both the regulated and unregulated condition.

In general, under regulation, flows will increase substantially during the winter months. Water levels under regulation will increase during the spring as they have naturally. However, instead of declining throughout the winter, there will be an increase from October to January, after which levels will decline until the spring runoff. The January peak will be approximately 3 feet higher than under unregulated conditions while the June (spring runoff) peak will be about two and one-half feet higher than the comparable unregulated level. Further,

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[1] Data presented in this section was derived from the Manitoba Hydro water levels and flows simulation model.

Table 55

SPLIT LAKE AND YORK LANDING

Water Levels and Flows* (Without Upper Gull Development)

	Unregulated		Regulated (Nov. 1975)	
	Level (Feet ASL)	Flow (000 cfs)	Level (Feet ASL)	Flow (000 cfs)
Maximum	551.6 (July)	175	554.4 (June) (+2.8)	217 (+42)
Average	545.4	103	547.3 (+1.9)	142 (+39)
Minimum	542.0 (Jan.-Mar.)	25	544.3 (May-Aug.) (+2.3)	60 (+35)
Range	9.6 ft.		10.1 ft. (+0.5)	
Open-Water Median	546.6		547.4 (+0.8)	
Winter Median	544.5		547.2 (+2.7)	

* Source: Manitoba Hydro

with the Upper Gull Development (see Figure 2 , p. 37), scheduled for about 1990, Split Lake will become a part of a forebay with an average water level of 553 feet about mean sea level.

(b) Impacts

The impact of the Lake Winnipeg, Churchill and Nelson Rivers Hydro development on the local economies of Split Lake and York Landing is likely to be minor, at least until the development of the Upper Gull site. The following discussion briefly outlines the most significant economic activities and attempts to define impacts and recommend amelioratory measures. It should be noted that this discussion does not consider the effects of the future development of the Upper Gull site.

Recommendation

> THAT a more detailed impact assessment of the Upper Gull Development be undertaken prior to its implementation. Present Manitoba Hydro plans indicate that this project may be undertaken around 1990.

(1) Fishing

The fishery employs approximately 10 to 12 local residents and has resulted in an average net income of about $400 per fishermen per year in the past five years. There have been severe problems with mercury pollution resulting in the closure of the fishery for all specie except whitefish during the 1970 and 1971 summer seasons. No commercial winter fishing is undertaken on Split Lake. Fish production and income levels can be expected to rise this summer with the lifting of the mercury ban on all species.

The development is expected to have minor negative effects on this activity. Increased turbidity[1] in Split Lake and the expected fluctuations in water levels could adversely affect fish production. Debris from the Burntwood River could result in property damage and present a safety hazard. It should be noted that no fisheries study has been undertaken in this area; therefore, productivity impacts remain speculative. The recommendations below are applicable only if the above impacts occur.

Recommendations

1. THAT a timber boom near the mouth of the Burntwood River be installed to ensure that

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[1] Estimates ranging from ten to twelve times the normal turbidity levels have been provided by officers of the Freshwater Institute, Fisheries and Marine Service, Environment Canada.

upstream debris does not enter Split Lake.

2. THAT real property losses to fishermen resulting from debris or other hydro development impacts be compensated.

3. THAT compensation through cash payment and/or provision of equivalent alternatives for losses in income attributable to the hydro development to fishermen be made available.

(2) Trapping

The level of trapping activity has been very low in the recent past. Between 1967/68 and 1971/72 an average of 28 Split Lake residents did some trapping, resulting in an average annual income per trapper of approximately $525. Beaver, lynx and mink were the main species taken. Discussion with conservation officers in Thompson indicates that trapper effort will continue to be low this year.

The impact of Manitoba Hydro's development on trapping is not expected to be significant. Furbearing productivity will probably not be affected substantially. However, there may be some short run disruption due to shoreline access problems. Further, trapline numbers 38, 39, 46, 50, 51, 52 and 53 of the Split Lake section may be affected by changes in the water regime of the Lower Churchill River. (See Figure 34.) Average annual production from these lines has been $3,800 for 7 trappers since the 1968/69 season.[1]

Recommendations

1. THAT trapper real property losses be replaced or equivalent cash payment made.
2. THAT provision be made for equivalent alternatives and/or compensation to affected trappers for loss of income.

(3) Transportation

At present, Split Lake relies on water transport in the summer and an ice road across the lake in the winter. Although

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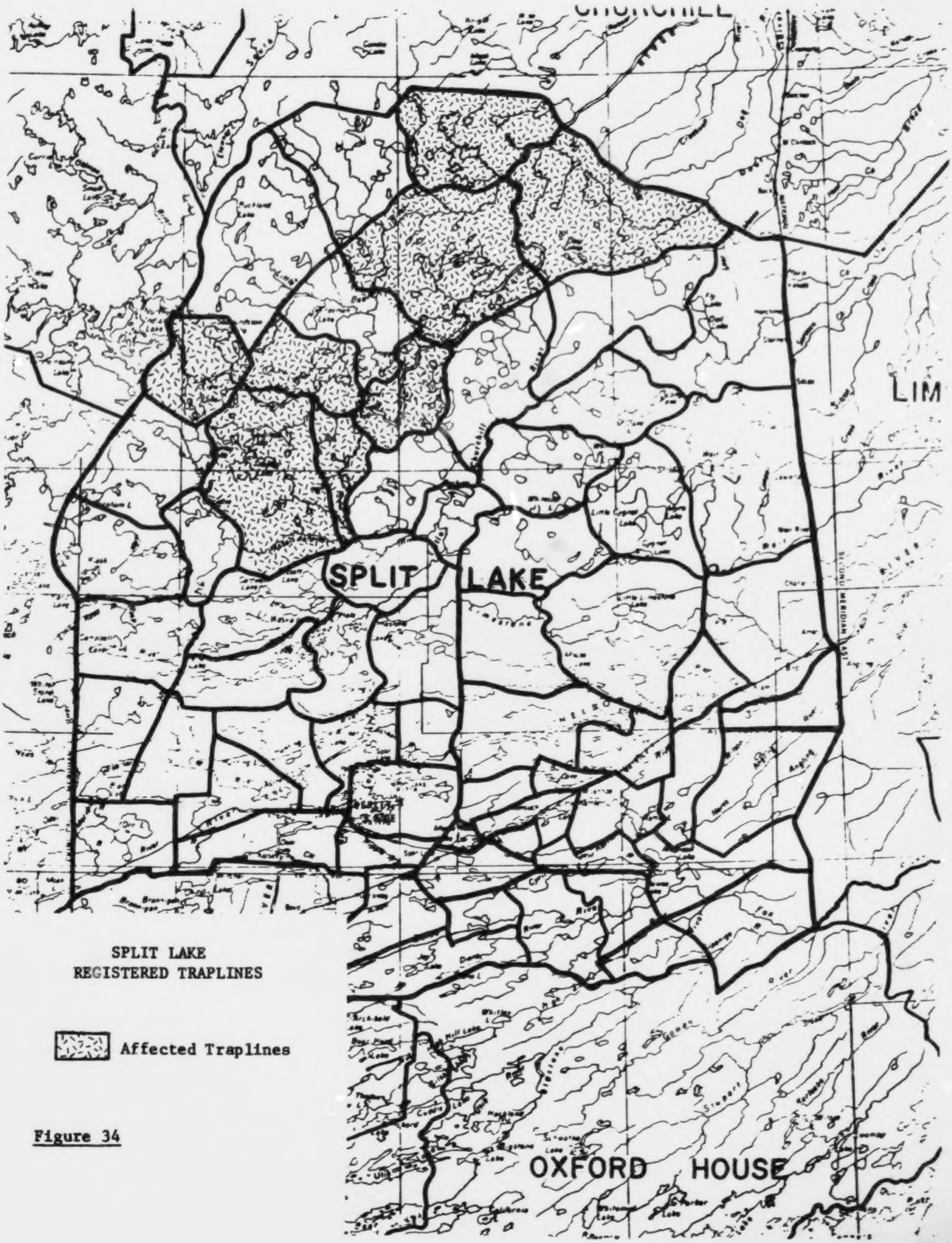
[1] Manitoba Department of Mines, Resources and Environmental Management files.


CHURCHILL
LIM
SPLIT LAKE
OXFORD HOUSE

SPLIT LAKE
REGISTERED TRAPLINES

▨ Affected Traplines

Figure 34

there is also an airstrip, it is not in good condition. It is expected that the community will have an all-weather road link when the Thompson to Gillam road is constructed. York Landing utilizes the same modes of transportation. However, there are no plans to link this community to the future Thompson-Gillam road.

There is a slight possibility that debris could present a danger to navigation during the open water season. Also, during the winter, the increased flows through the lake could hamper road transportation. However, Hydro personnel tend to discount the possibility of poor ice conditions. These estimates are made on the basis of extremely poor data. Nevertheless, the potential hazards to transportation appears to be significant enough to warrant closer monitoring.

Recommendation

> THAT the appropriate Provincial agency ensure that a careful monitoring program of transportation safety on Split Lake be instituted prior to changes in water regime.

(4) Employment

At present, Split Lake and York Landing have chronic unemployment problems.[1] Future job opportunities related to the Hydro developments on the Lower Nelson and the Thompson-Gillam road appear to be excellent. Perhaps the most constructive action that could be taken in relation to these communities is a concerted training and job placement program in the very near future.

Recommendation

> THAT the appropriate Federal and/or Provincial agencies develop, in consultation with local representatives, programs to enable the maximization of future job opportunities to the benefit of local residents.

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[1] This statement is made on the basis of numerous conversations with personnel of the Manitoba Dept. of Northern Affairs and an examination of fragmentary manpower and employment data concerning these communities.

3. THE LOWER CHURCHILL RIVER

ILFORD AND THE TOWN OF CHURCHILL

The Town of Churchill is located at the mouth of the Churchill River at Hudson's Bay. Its population is approximately 3,500 of which 50% is under age 15.[1] Its major economic activities are in the area of marine transport, local services and government administration. This community differs substantially from those discussed earlier in that it does not rely on traditional pursuits such as trapping and fishing as an important source of employment and subsistence income. Ilford, with a population of approximately 200, is located on the Hudson Bay Rail Line approximately 90 miles east-northeast of Thompson. The economy centers around the railway and transportation services, fishing and, to a minor extent, trapping. (See Figure 30 for locations.)

(a) Water Regime

The diversion of the Churchill River will affect both of these communities. Plans presently indicate that in June, 1975, Manitoba Hydro will reduce flows at Missi Falls (see Figure 2 , p. 37) to 500 cfs from an average unregulated June flow of approximately 39,000 cfs in order to achieve a Southern Indian Lake Reservoir level of approximately 847 feet by November, 1975. Subsequent to this action, outflows at Missi Falls will be regulated by Manitoba Hydro to ensure compliance with their operating licence for Southern Indian Lake and to meet the power generation needs of plants on the Lower Nelson River. The changes in the flow patterns at the Town of Churchill that will result from these actions are outlined in Table 56 below.

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[1] Manitoba Department of Northern Affairs files provided the general information presented here concerning these communities.

Table 56

MEAN MONTHLY FLOWS OF THE CHURCHILL RIVER
AT THE TOWN OF CHURCHILL*

	Unregulated (cfs)	Regulated (cfs)
Maximum	98.700	98.700 (-100)
Average Open Water	46,700	21,300 (-25,400)
Average Winter	33,200	4,900 (-28,300)
Minimum	22,800	1,000 (-21,800)

* Source: LaSalle Hydraulic Laboratory Ltd., *Ice Regime Study, Lower Churchill River,* May, 1974.

In addition, four lakes (see Figure 30, p.367 for locations) located on the Lower Churchill River will experience substantial reductions in water levels and surface areas. Table 57 summarizes the information concerning such changes.

Table 57

MEAN MONTHLY WATER LEVELS
LOWER CHURCHILL LAKES *

Unregulated Levels (Feet ASL)

	Partridge Breast	Northern Indian	Fidler	Billard
Maximum	812.2	784.7	769.1	632.6
Average	803.7	774.0	759.7	622.1
Minimum	800.3	769.6	756.0	618.4
Range	11.9 ft.	15.1 ft.	13.1 ft.	14.2 ft.

Regulated Levels (Feet ASL)

	Partridge Breast	Northern Indian	Fidler	Billard
Maximum	810.9 (-1.3)	783.0 (-1.7)	767.9 (-1.2)	631.1 (-1.5)
Average	794.6 (-9.1)	764.3 (-9.7)	751.6 (-8.1)	613.8 (-8.3)
Minimum	788.4 (-11.9)	757.6 (-12)	746.2 (-9.8)	608-9 (-9.5)
Range	22.5 ft.	25.4 ft.	21.7 ft.	22.2 ft.
Reduction in Surface Area	32%	44%	73%	52%

* Source: The Effects of Diversion of the River regime of the Lower Churchill River Water Resources Branch, Manitoba Department of Mines, Resources, and Environmental Management, June, 1971.

In summary, Manitoba Hydro's Diversion of the Churchill River will result in major changes in the water regime of this area. Partridge Breast, Northern Indian, Fidler and Billard Lakes will be drastically reduced in surface area and water levels in the river itself will drop substantially. After the Southern Indian Lake reservoir is established, average flows will increase somewhat but will remain at approximately one-third of the historic average flow. Simulation data recently received from Manitoba Hydro indicates that drastic fluctuations around this average flow figure will continue into the foreseeable future. Winter ice conditions are expected to change as well.[1] Conclusions put forward by La Salle Hydraulic Laboratory indicate that at a river discharge of 10,000 cfs, there was thick ice cover in areas with rapids but no tendency toward icing of the river bed was noticed. At lower flows this condition is expected to be more severe. Although these low flow conditions are expected to prevail for the majority of the time, the system will also be subject to high flows during flood years. Historically, flows as high as 98,800 cfs have been recorded and the Missi Falls control structure has been built to a discharge capacity of 154,000 cfs.

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[1] La Salle Hydraulic Laboratory Ltd., Ice Regime Study, Lower Churchill River, May 1974.

The overall effects of the development on the Lower Churchill will be to reduce flows by about two-thirds of the historic average. In addition, at least four lakes will be substantially reduced in surface area. These conditions will be subject to wide variations, depending upon the operational requirements of Manitoba Hydro and varying hydrological conditions.

(b) Impacts

The above changes will have impacts in the areas of fishing, trapping, water supplies, and transportation.

(1) Fishing

Fishing is the most intensive actual resource use in this area. Northern Indian Lake, Fidler and Billard Lakes have been fished in the recent past by the Ilford Fishermen's Co-op. From 1969 to 1973, production from these lakes accounted for about 30% of the Co-op's landed value[1] and provided an average annual total income to fishermen and packers of $15,845. Beside generating significant amounts of local income and contributing substantially to the Co-op's production, there is also a substantial investment in lakeside stations. The replacement value of the four camps is estimated to be approximately $120,000, assuming that present conventional methods can be employed.

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[1] Information concerning this fishery was derived from Freshwater Fish Marketing Corporation and Manitoba Department of Mines, Resources and Environmental Management files.

If no mitigation is undertaken, it can be expected that the income generated by fishing these lakes will be reduced to a size where it is entirely uneconomic. This would result in an average loss of $1,000 to $1,150 in annual income for 10 to 11 fishermen and approximately $4,500 in annual wages for packing. In addition, $120,000 in capital facilities would be abandoned. The exact effect of this closure on the Ilford Co-op cannot be assessed. However, it appears likely that this loss would result in extreme hardship to the point where the operation would be in danger of closure. This statement is reinforced by the uncertainty which also surrounds the Split Lake fishery, which is part of the Ilford Co-op's production.

(2) Trapping

Trapping in the area is generally sporadic and production is low.[1] There are three R.T.L. sections in the Lower Churchill area: Split Lake (Figure 34), Churchill (Figure 35), and Southern Indian Lake (Figure 29). There are eight R.T.L. blocks from the Split Lake section which may be affected. In 1970/71, six trappers who occupied four of these blocks reaped a total harvest value of $1,642 or an average of $247 per trapper (see discussion of Split Lake trapping). In the Churchill section, there are 7 possible affected lines, of which only one was trapped in 1970/71. This line produced $289 for one trapper. Indications are that the level of commercial trapping has not improved in this area and that trapping is now recreational in nature. Even so, there is very little production. There are four blocks affected in the Southern Indian Lake section. Two of these produced no fur in 1970/71. The other two produced $2,651 for five trappers or an average of $530 per trapper.

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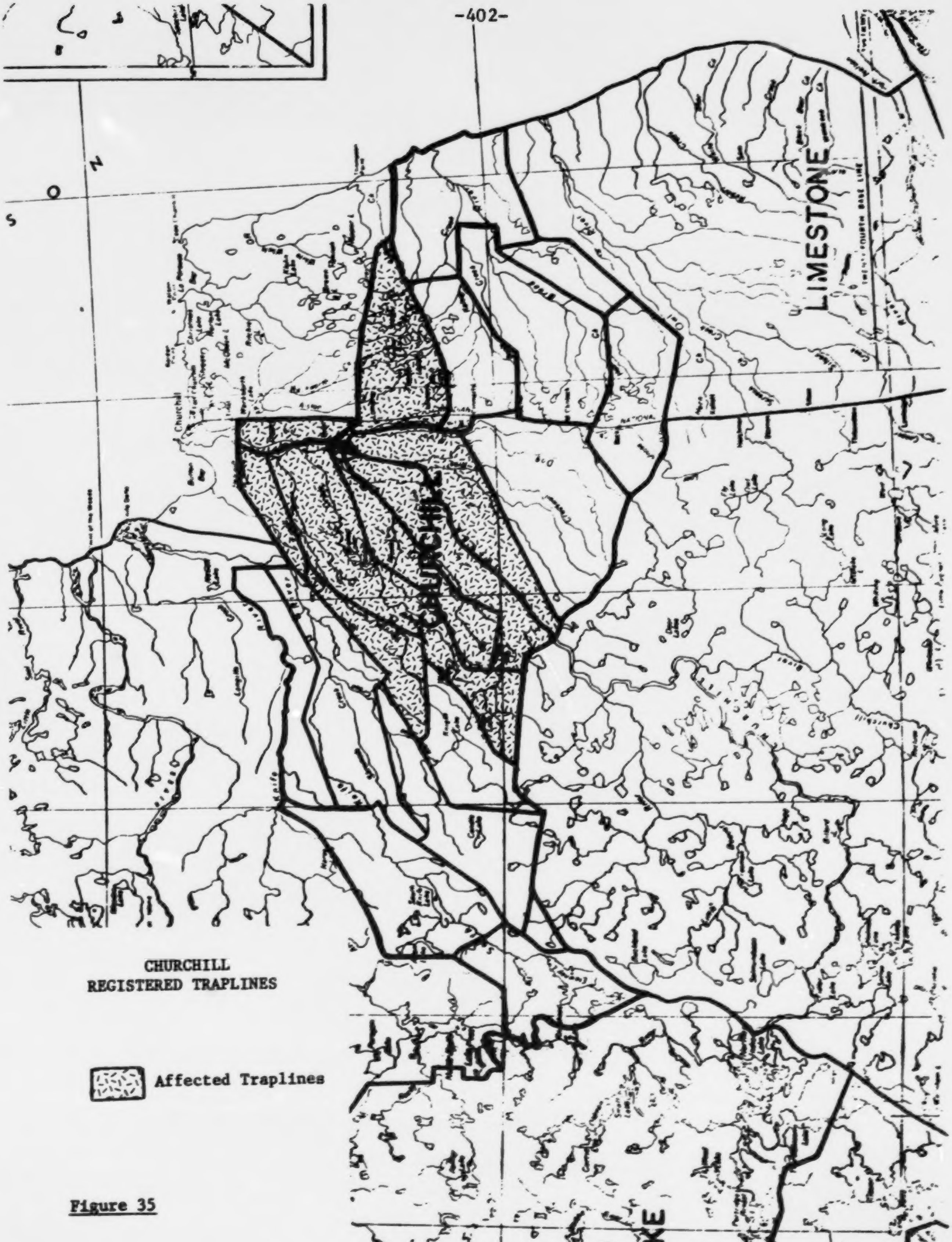
[1] Information derived from Manitoba Department of Mines, Resources and Environmental Management files.

If no mitigation is undertaken, the impact on furbearers in the immediate area is expected to be severe initially. Further, based on the projected flow fluctuations discussed earlier, there is a possibility that impacts could occur periodically in the future. For this reason, it is plausible to assume that trapping in this area will be substantially curtailed. On the basis of present data, this could result in an annual loss of approximately $355 per trapper for 13 trappers. It should be noted that this estimate is based on


LIMESTONE
CHURCHILL
S
O
N
KE

CHURCHILL
REGISTERED TRAPLINES

▨ Affected Traplines

Figure 35

actual production. Impacts based on potential production would be much higher.

(3) Water Supply

The Town of Churchill's water supply may be affected. Studies to date[1] indicate a high probability of salt water intrusion and/or ice damage to this facility. Mitigation of these problems will likely require substantial expenditures. However, to date, no costing, etc., has been outlined. Two alternatives appear to have been mentioned:[2]

i) construction of a reservoir at Churchill to store water during periods of high flow for use during low flow periods, and

ii) construction of a rock-filled weir downstream of the intake to prevent intrusion.

Two other alternatives which may warrant consideration are:

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[1] La Salle Hydraulic Laboratory Ltd., *op. cit.*

[2] Manitoba Hydro is examining these as well as other alternatives at this time. A recent report entitled *Lower Churchill River - Study on Navigation Channel Provision and Water Intake Modification*, April, 1974 by Manitoba Hydro discusses these issues in detail.

i) relocate intake upstream, or

ii) revise Manitoba Hydro's operating licence to allow adequate flows at Churchill to ensure no intrusion. It is felt that a flow of between 10,000 and 20,000 cfs would be necessary to achieve this.

(4) Environment and Recreation

In addition to the above resource uses, this area is important from an environmental point of view. The area is as yet unrepresented within the National Parks system and would likely be rejected if flows, etc., are allowed to change as now visualized under hydro development. The area is also a major staging ground for geese on their spring and fall migration. A further point is that there is some canoe activity on this system. However, due to access problems, this is minimal. Cottaging is prevalent in the local Churchill area with hunting, fishing and boating being the predominant related activities. The anticipated changes in the water regime will probably destroy much of these activities, since the recreational viability is closely linked to water based pursuits. This situation can be expected to become a matter for compensation.

(5) Mitigation Measures

In discussing mitigation in this area, two separate issues can be clearly delineated:

(i) mitigation pertaining to the lakes on the Lower Churchill River, and

(ii) mitigation related to issues in the local Churchill area.

(i) Lower Churchill Lakes

As previously outlined, the major impact in this area will accrue to the fishery. There will be two productive traplines affected as well as recreational and environmental impacts. Total tangible damages will amount to approximately $20,000 annually in wages, income and property damage to the Ilford fishery and another $1,500 to $2,000 in income from trapping. The potential losses to recreation and the environment will be great. However, quantification of these damages is not possible.

It has been proposed that a series of weirs be built at the outlets of the four lakes to maintain lake levels and hence the fishery. The cost of broad, fixed crest, rock weirs has been estimated at $1.4 million each. This cost does not include future maintenance expenditures. Further, these estimates are extremely rough. Before any decision could be made, more accurate estimates would be necessary. From a fishery viewpoint, it appears that construction priorities for these structures would be:

1. Northern Indian Lake
2. Fidler Lake
3. Partridge Breast Lake, and
4. Billard Lake

A second proposal involves a gated control structure at the outlet on Northern Indian Lake. This structure would ensure minimum flows down the Churchill by using Northern Indian Lake as a storage reservoir. No cost or frequency information is available. If fluctuations in level and flows on Northern Indian Lake are moderate, the fishery on this lake could be sustained.

If the above structures are not built, the following actions are recommended:

Recommendations

1. THAT compensation payments be made to fishermen affected and the Ilford Co-op for lost income and facilities.

2. THAT relocation of fishing operation to a comparable lake, e.g., Gauer or Baldock Lake, be initiated.

3. THAT information about these impacts be communicated to the Ilford Co-op and fishermen to enable discussion and decisions to be made concerning their preferences.

(ii) The Town of Churchill

As mentioned previously, there will be impacts in this area on recreation and the Town's water supply system. Suggested mitigation measures for the water supply problem are generally structural in nature and have been mentioned earlier. It should be stressed that action on this issue must be taken quickly since Missi Falls will be closed in June, 1975. In the case of recreation, a weir to maintain river levels has been suggested. It is thought that this could be located near Mosquito Point. If this is not forthcoming, compensation will likely be necessary.

The difficulty of predicting future water regime changes in this area and associated recreational, environmental, economic and social impacts is such that an ongoing management mechanism, such as the Lake Winnipeg Regulation Board, would be the best approach. This would allow the flexibility in government policy and regulations needed to adapt to situations as they arise. Further, government control of ongoing hydro operations in this area would be assured. The same problem could arise in relation to the Rat-Burntwood Rivers system.

Recommendations

1. THAT alternatives be examined and a decision made quickly to ameliorate the problem of disruption of the Churchill water supply and local cottage activity.

2. THAT a Management Board, similar to or an expansion of the Lake Winnipeg Regulation Board, be established to ensure ongoing management of the Lower Churchill River, Southern Indian Lake reservoir, and Rat-Burntwood diversion route.

4. THOMPSON AND LEAF RAPIDS

These communities can be categorized as single industry (mining) northern communities. Both communities have been established within the last fifteen years to exploit mineral resources in northern Manitoba. The labour force tends to be skilled and highly mobile. There is no economic reliance on the traditional activities of trapping, fishing and hunting, which are undertaken only as recreational pursuits.

The effects of Manitoba Hydro's Churchill River diversion on these communities will not be dramatic. Water levels below the Town of Leaf Rapids will rise up to Leaf Rapids (see Figure 30 , p. 367) as a result of impoundment of Southern Indian Lake. At Thompson, the Burntwood River's flows and levels will increase substantially. (See Table 58.)

At Leaf Rapids the changed water regime will disrupt some shoreline areas which are utilized by local residents for recreational purposes.[1] In addition, the rise in water levels could hamper the operation of a cement mixing plant located on

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[1] Recreation Study, Southern Indian Lake, prepared for Lake Winnipeg, Churchill and Nelson Rivers Study.

Table 58

WATER LEVELS AND FLOWS
MEAN MONTHLY BURNTWOOD RIVER AT THOMPSON*

	Unregulated		Regulated	
	Level (above MSL)	Flow (000 cfs)	Level (Above MSL)	Flows[1] (000 CFS)
Maximum	608.5	18.0	614.5 (+6.0)	36.2 (+18.2)
Average	599.7	3.5	613.6 (+13.9)	31.6 (+28.1)
Minimum	586.7	.27	610.4 (+23.7)	7.8 (+7.5)
Range	21.8 ft.		4.1 ft.	

* Source: Manitoba Hydro

the outskirts of Leaf Rapids. The loss of some local recreational opportunities will likely be offset by the planned construction of a road into the Granville Lake area and the development of Hughes Lake as a provincial park. The latter possibility is under consideration by the Federal-Provincial Churchill River Study.

The effects of the diversion on Thompson will center around transportation, the town's water supply system, and recreation.

(a) Transportation

Thompson's float plane base is located downstream of the town, immediately below the Highway 391 bridge. Debris caused by flooding and bank erosion upstream is expected to be heavy. This could create a major safety hazard to float planes. Manitoba Hydro has proposed the placement of a number of booms which, in combination with the proposed timber clearing program, may partially mitigate this problem. However, careful monitoring of debris conditions in the area of the float plane base will be necessary to ensure safety. There is also a possibility of some property damage to docks and other facilities at the bases.[1]

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[1] Although simulation data indicates a maximum regulated flow of 36,200 cfs; Manitoba Hydro's operating licence requires that flows not exceed approximately 34,000 cfs at Thompson.

Recommendations

1. THAT Manitoba Hydro undertake a timber clearing and booming program to control debris in the area of the float plane base on the Burntwood River.

2. THAT a monitoring program be instituted to ensure safe operation of aircraft in this area.

3. THAT in the event that safety hazards cannot be effectively overcome, the float plane base be moved to a more suitable location.

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[1] For a more detailed discussion of the effects of the diversion see the Rat-Burntwood Mitigation Study, Underwood McLellan & Associates, December, 1973.

(b) Water Supply

Thompson's intake for its water supply is located on the Burntwood River. The increased flows and water levels expected after diversion will necessitate modification in both the Thompson and the Birchtree Mine intakes to prevent disruption of service due to periodic high water levels. The importance of an uninterrupted supply can be indicated by the fact that even a brief shutdown would result in the closing of the INCO plant which involves 4,000 jobs. Further, a stoppage of more than 10 hours could result in no water for the town's emergency services even if the INCO plant ceased to operate. The Underwood McLellan report recommends mitigation of this problem through redesign and reconstruction of the intake system. This study agrees with these recommendations and fully supports them.

(c) Recreation

The final area of concern is the impact on local recreation alternatives. The Burntwood River is utilized extensively for recreation in both summer and winter. A local water ski club uses the stretch between Thompson and Manasan Falls and many anglers and picnickers are in evidence during the summer months. A provincial park, located in Thompson, will be partially flooded and subject to erosion and debris problems. In winter, the river has been used extensively by skidoo enthusiasts as far upstream as Birchtree Lake. The dramatic increase in flows is expected to generate dangerous ice conditions which will likely disrupt this winter recreational activity.

Mitigation of these recreational impacts would best be accomplished by the provision of alternative local facilities away from the Burntwood River area. The provision of access to the Partridge Crop Lake area and the development of facilities for picnicking, etc., appears to be the most appropriate solution.

Recommendation

> THAT an integrated resource use plan for Partridge Crop Lake that will provide recreational facilities for the people of the Thompson area be drafted and implemented.[1]

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[1] An integrated plan is necessary because of Manitoba Forest Resources Ltd. plans to harvest timber within this area.

5. LAKE WINNIPEG

The Lake Winnipeg Regulation Project will probably have a positive impact on socio-economic activity associated with the Lake Winnipeg area. The area possesses a viable commercial fishery, substantial recreational resources, transportation facilities and a number of local resource and service industries. Regulation will result in a greater degree of stability in lake levels which will, in most cases, enhance resource use in the area. A report prepared by the Manitoba Department of Mines, Resources and Environmental Management entitled, Program for Regulation of Lake Winnipeg, January, 1972 outlines the expected impacts of the development and recommends the establishment of the Lake Winnipeg Management Board to oversee the future development and management of the lake. Also, in June, 1972, the Lake Winnipeg Recreational Demand Study[1] indicated that substantial growth in recreational activity in this area could be expected. Both of these reports generally concluded that the impact of hydro development on Lake Winnipeg would, in most cases, be positive.

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[1] P. M. Associates, Ltd., Lake Winnipeg Recreational Demand Study, June, 1972.

APPENDIX I

METHODOLOGY

METHODOLOGY

The objective of the study and basic framework and approach have been discussed in the body of this report. However, there are a number of methodological issues and limitations that have not been discussed which may provide some guidance to researchers who engage in this type of endeavour in the future. This appendix outlines the methodologies used in determining both the social and economic impacts and lists a number of limitations inherent in the approach taken.

The less formally stated and more specific objectives of the study include the development of community profiles which outline:

a) the community economic functions, i.e., production, distribution and consumption patterns; community income needs; demographic structure and trends; traditional sources and amounts of family and community income in cash and kind.

b) social functions of socialization, social control, social participation and mutual support.

These aspects of the profile:

i) describe what the community is like now,

ii) determine the degree to which the community remains traditional; is in a state of transition; is a declining community,

iii) can be used as a baseline for continued monitoring of change effects,

iv) make pertinent observations and predictions about how such community systems or parts of systems may be affected by, and be expected to react to, proposed environmental and economic change, it being assumed that the communities under study are at the stage in development where social organization is a function of economic activity,

v) offer suggestions and make recommendations as to how governments may assist the communities through appropriate mitigating interventions to cope with the social and economic adjustment implicit in change, and,

  - vi) where possible, suggest how any predicted social-psychological and economic stress implicit in change, may be minimized.

c) historical account of the development of communities with a special emphasis on;

  - i) economic history of communities as may be evident, for example, in the growth of individual and collective entrepreneurial capacity and the emergence of the division of labour in a community,

  - ii) political development as may be evidenced by the number, autonomy and degree of sophistication of politically oriented groups in a community, eg. Band Councils, community councils, Manitoba Indian Brotherhood locals, Manitoba Metis Federation locals, school, health and similar committees, and,

  - iii) community social organization, its degree of integration at the local level and the nature of linkage of local social organizations to extra community systems.

Further, a number of technical reports concerning issues in the areas of nutrition, culture preservation (museum) fishery rationalization (simulation model) and social stress were prepared to supplement the above information.

The profiles were developed:

a) by tapping various existing data sources, eg. other reports, agency files, other agency people, literature reviews, etc. (See list of sources.)

b) by extensive disciplined field observation;
   i) to obtain adequate orientation to communities being studied.

   ii) to design appropriate interview and discussion schedules.

   iii) to more accurately analyze and interpret data that is collected.

c) through discussion with community residents including those providing formal and informal leadership:
   i) to interpret the study process,

ii) to solicit community participation.

d) through focused individual interviews and group discussion.

This whole process is based on the assumption that the study team and the communities have accurate, comprehensive information about physical environmental changes that will result from the proposed hydro development, including phasing. Unfortunately, this was not always the case.

The initial approach to the community was a letter to the Chief and Mayor, followed-up by a personal visit by the team co-ordinator and assistant co-ordinator and members of the study team. These complementary activities were intended to introduce the study team, outline the objectives of the study, describe the method to be used in collecting data and emphasize that the information gathered about the community would be shared with the Chief and Mayor and their Councils before making it available to other sources. Several visits were made to the community before interviews were begun. On some of the visits team members were accompanied by Manitoba Hydro representatives and other government personnel who were responsible for information inputs into the community.

The study team corresponded with various government departments, the Manitoba Metis Federation, the Manitoba Indian Brotherhood and churches having missions in the community, informing them of the study team purpose and approach, etc., and soliciting their co-operation, support and sanction. This was followed up by team visits to the agencies, and in five instances resulted in regional meetings with agency staff. At The Pas there were meetings with Mines, Resources and Environmental Management, Health and Social Development, Northern Affairs and Indian Affairs staff. At Thompson meetings were held with Indian Affairs, Mines, Resources and Environmental Management, Northern Affairs and Manitoba Metis Federation staff.

The Chief and Mayor and their Councils were asked to recommend a local person to act as the local contact person and member of the study team, and who would be paid by the team for a six-week period under the following terms of reference:

-review with team members interview schedule and test questions for clearness, appropriateness, local applicability, etc.,

-assist in selecting at random from an updated voters list, a sample of people for interviewing,

-assist in preparing an introduction for interviews,

-contact the people in the sample and explain the study, interview, etc.,

-assist in identifying members of leader nominating panel,

-prepare list of community groups and elected officials of each group. Contact these officials and prepare them for a discussion of guideline questions provided in Schedule IV,

-accompany interviewers and interpret where necessary,

-assist in analysis of information gathered from interviews.

Data for the study was gathered through the use of four interview Schedules (Annex I).

SCHEDULE I: was administered to 35 residents selected at random from the community voters' lists. Interviews were conducted in English and/or Cree through an interpreter, and lasted 1½ to 2 hours each. The interview location was at the option of those being interviewed, and although the majority of the interviews were conducted at a central point, a few were conducted in peoples' homes.

The general schedule of 85 structured and open-ended questions drawn up in consultation with professional social psychologists at the University of Manitoba, was reviewed in a day long workshop with team members, local contact person and the University consultant.

SCHEDULE II: was administered to 10 people referred to as a nominating panel, who know the community well but whose relationship to the community is a professional and/or official one. The object of Schedule II was to identify the leaders of the community. The respondents were asked to rank the leaders they had named. The names elicited were weighted from ten to one according to their ranking from 1st to 10th. The ten names receiving most weight were accepted as leaders for the administering of Schedule III.

SCHEDULE III: was administered to the top ten leaders. The purpose of this schedule was to determine the leadership structure of the community.

SCHEDULE IV: was used as a set of guideline questions for discussion with elected officials of various formal groups and committees in the community, e.g., Band Council, Community Council, School Committee, Trappers' Association, Health Committee, etc.

SCHEDULE V: was used as a set of guideline questions for discussion with highschool students from Nelson House going to school at Thompson.

The study was designed to maintain, insofar as possible, the scientific rigor of data collection. However, the study process was action-oriented in that issues of immediate concern to respondents, and which were brought to the attention of the study team members, were referred to appropriate government departments or other agencies for action. This gave rise during the study to two study auditors or monitors being appointed by each of three government departments, i.e., Mines, Resources and Environmental Management, Northern Affairs and Department of Indian Affairs and Northern Development. The primary purpose of the study auditors was to become aware of study findings and to refer any findings that could have implications for government programming, to the appropriate department for action. In some cases, action required policy decisions, in which case the issue was brought to the attention of the Advisory Committee to the Cabinet Committee on Churchill-Nelson Hydro Development. Further, while the team was conscious of the need for a report of its study conclusions and findings, and worked towards that end, it became obvious that what was even more important to the community was what would happen to their concerns in the meantime. Implicit in this expression of local concern and in the study process was the need to increase the information flow between the community and the outside, as well as within the community, and to improve access of the people to pertinent information. The study team therefore became as concerned with the study process as it was with the end product of the study, the final report.

LIMITATIONS OF THE STUDY

A number of analytic and methodological limitations have become apparent during the course of the study. They can generally be categorized into two problem areas; a) data and information, and b) analytic and evaluation problems.

Data and information problems centered on the lack of precise physical impact statements and gaps in economic data, particularly in the areas of employment, wage income, occupational skills inventories and details concerning levels of income-in-kind derived from such activities as hunting, fishing and trapping. Systematic information on social structures, decision-making patterns, etc., was not available. This necessitated interviewing as was described above. The absence of precise physical impact statements in such areas as wildlife and limnology, prevented the accurate quantification of impacts on cash income derived from the traditional activities. Further, fragmentary data systems in the areas of labour force and employment statistics necessitated the time consuming process of visiting numerous government offices in order to derive a comprehensive data set on the affected communities.

In summary, many of the conclusions contained in this study concerning social and economic impact have had to be qualified because of a general lack of systematic data series relating to northern Manitoba.

The second, and perhaps more important limitation of this study concerns the lack of accepted methodological and evaluation techniques in such areas as social impact analysis, evaluation of lifestyles and prediction of futures in remote, relatively underdeveloped areas. To date, socio-economic studies have not utilized any deliberate structured approach to social impacts. As a result there are no comparative studies to serve as a methodological or evaluative guideline for the innovative approach which was adopted. To a lesser degree, the same problem existed in evaluating traditional lifestyles. Estimation of the value of income-in-kind associated with traditional pursuits was achieved through the application of shadow prices derived from southern Manitoba price statistics.[1] This approach does not recognize the more intangible aspects, such as the importance of these food sources to the general level of nutrition in the community and the implications of this source of income in the maintenance of traditional lifestyles. Accurate prediction was also extremely difficult. The lack of data contributed to this problem but, perhaps the greatest inhibiting factor was the nature of the communities at this point in time. They are relatively underdeveloped and remote with social and cultural patterns that do not always allow the application of commonly accepted assumptions concerning labour force mobility and motivation to accumulate economic wealth. Further, the implications of a development such as a road tend to be much more extensive in these types of communities because of their relatively underdeveloped nature.

---

[1] For more details concerning the derivation of these estimates see Technical Report #5, Cross Lake Community Profile.

In summary, although attempts were made to confront these issues, it should be noted that much of the analysis can be challenged on methodological grounds. Nevertheless, the attempt was necessary and useful since it provides a basis for comparison and refinement in future studies.

ANNEX I: SURVEY SCHEDULES

GENERAL

SCHEDULE 1

COMMUNITY: DATE:

INTERVIEW NUMBER: TIME:

RESPONDENT: INTERVIEWER:

NOTE: N/A = Not Applicable
N/R = No Response

1. Do you visit other communities more than once a year?

(a) __________Yes

(b) __________No

2. If "Yes", how often do you visit?

(a) __________Once a week

(b) __________Once a month

(c) __________2 or 3 times a month

(d) __________Once a year

(e) __________2 or 3 times a year

(f) __________Other

3. Which communities do you normally visit more than once a year (week, month?)?

(a) ____________________

(b) ____________________

(c) ____________________

4. On the average, how long do you stay away for each visit?

(a) __________one day

(b) __________2 to 4 days

(c) __________1 week

(Cont'd. next page)

4. Cont'd.

(d) __________2 to 3 weeks

(e) __________one month

(f) __________2 to 3 months

5. What is the main purpose of most of your trips?

(a) __________to shop

(b) __________to visit with friends and relatives

(c) __________to work (or look for work)

(d) __________to get news or information

(e) __________other

6. What are the ways in which you spend most of your spare time?

(a) __________sitting around with the family

(b) __________visiting friends

(c) __________listening to the radio

(d) __________doing beadwork

(e) __________watching T.V.

(f) __________playing cards

(g) __________playing bingo

(h) __________other (explain)________________________________

____

____

7. Tell me please, how does news and information about the community get around in your community.

(a) __________daily chit-chat in The Bay store

(b) __________notice board in The Bay store

(c) __________regular chit-chat at the Band or Community Council office

(d) __________general discussion with friends

(e) __________printed information avialable from the Band or Community Council office

(Cont'd. next page)

7. Cont'd.

(f) __________from informed individuals (probe for identities)

(g) __________community meetings

(h) __________other (probe)

8. In reference to #7, which do you consider to be your main source of information?

________________________Answer

9. How does news and information about happenings outside the community and international events usually get to your community?

(a) __________radio

(b) __________television

(c) __________printed material, e.g., newspapers

(d) __________reports from people who have been out

(e) __________meetings with visitors to community

(f) __________other

10. In reference to #9, which of these do you consider to be your main source of information?

________________________Answer

11. About how many meals a week does your family have of the following foods each season?

	Meals				Weeks					
	1-3	4-6	7-9	10-12	1-3	4-6	7-9	10-12	13-15	more (specify)
Fish										
Moose										
Beaver										
Waterfowl										
Muskrat										
Lynx										
Other (Explain)										

12. What other kinds of food do you grow or gather locally?

(a) __________various kinds of berries, name______________

____

____

(b) __________home grown vegetables, name ______________

____

____

____

(d) __________other

13. How long do these foods last?

(a) __________several weeks

(b) __________all winter

(c) __________other

14. Do you ever preserve food for future use?

(a) __________Yes

(b) __________No

15. If "yes", how?

(a) __________canning and/or bottling

(b) __________dry

(c) __________smoke

(d) __________freeze

(e) __________other

16. What way do you normally cook fish and meat?

(a) __________boiled

(b) __________fried

(c) __________baked or roasted

(d) __________other

17. Which kinds of foods would you like the store (s) to stock that they do not stock now? (If nothing, record nothing.)

(a) ____________________

(b) ____________________

(c) ____________________

(d) ____________________

(e) ____________________

18. Do you normally do any shopping outside your community?

(a) __________Yes

(b) __________No

19. If "yes", generally for what kinds of goods?

(a) __________clothing

(b) __________food

(c) __________household appliances

(d) __________other, explain________________________________

____

20. If "yes", why?

(a) __________cheaper

(b) __________better quality

(c) __________greater variety, more to choose from

(d) __________goods not available locally

(e) __________other, explain________________________________

____

NOW I WOULD LIKE TO ASK YOU A FEW QUESTIONS ABOUT WHAT YOU THINK OF HOW CHILDREN ARE GROWING UP IN YOUR COMMUNITY:

21. How do the younger children (say under 13 years of age) spend their time when they are not in school?

(a) __________skating

(b) __________skidooing

(c) __________fishing

(d) __________dog sledding

(e) __________other, explain________________________________

22. How do the teenagers in the community spend their time when they are not in school?

(a) __________reading

(b) __________skating

(c) __________skidooing

(d) __________playing cards

(e) __________youth group

(f) __________other, explain________________________________

23. In your opinion, are the children in your community growing up with the feelings and plans for the future that the elders of your community would like them to have?

(a) __________Yes

(b) __________No

If "no", in what ways are they not?______________________________________

____

____

____

24. In your opinion, do the children in your community behave the way the elders of your community would like them to behave?

(a) __________Yes

(b) __________No

24. Cont'd.

If "no", in what ways are they not?______________________________

____

____

____

25. Which of the following most influences the way children think and behave now? (Rank from 1 AS MOST to 6 AS LEAST - using cards)

(a) _________parents, older sisters and brothers
(b) _________grandparents, aunts and uncles
(c) _________friends around the same age or a little older
(d) _________school
(e) _________church
(f) _________Chief and/or Mayor and Council

26. Are there other things which influence how children think and behave?

____

____

____

____

27. Do you have television in your home?

(a) _________Yes
(b) _________No

28. Do you think television will have any influence on children's behaviour?

(a) _________Yes
(b) _________No

29. If "yes", how?

(a) _________assist in their school work
(b) _________keep them away from their studies

(Cont'd. next page)

29. Cont'd.

(c) __________keep them away from healthy outdoor activity

(d) __________plant ideas in their minds

(e) __________other

30. What other effects if any do you think T.V. may have in your community?

(a) __________provide people with more information

(b) __________provide additional entertainment

(c) __________detract from socializing

(d) __________control drinking

(e) __________other

NOW I WOULD LIKE TO GET YOUR FEELINGS
ABOUT A NUMBER OF ISSUES RELATED TO
YOUR COMMUNITY:

31. Whom do you think is most responsible for the hydro development in the North?

(a) __________Manitoba Government

(b) __________Government of Canada

(c) __________People of Manitoba

(d) __________Manitoba Hydro

(e) __________Other

32. What are some of the things you think may happen to your community as a result of hydro development in the North? (Probe)

____

____

____

____

33. (Interviewer, if answer to above tends to be negative, ask) Do you foresee any good things happening? (Probe)

____

____

____

34. What are your sources of information regarding how the hydro development may affect your community?

(a) __________newspaper
(b) __________radio
(c) __________I/C Bulletins, eg. Churchill River Weekly, etc.
(d) __________your visits outside the community
(e) __________other people in the community
(f) __________visitors to the community
(g) __________other sources, explain please__________________

____

35. Which is your major source of information re hydro?

____

36. Are there things that you would like to do as a result of the proposed hydro development while there is still work for wages available in construction camps?

(a) __________Yes
(b) __________No

37. If "yes", what?

(a) __________have a full time job
(b) __________have a job with time off to hunt and fish
(c) __________acquire skills that could be used to get other jobs
(d) __________make sure that any disruption is adequately compensated for
(e) __________other

38. Are there things that you would like to do as a result of the proposed Hydro development after the project is finished and there is no longer work available on construction?

(a) __________Yes

(b) __________No

39. If "yes", what?

(a) __________use work experience and training to get job somewhere else

(b) __________move with the family to some place where work is available

(c) __________commute to and from some place of employment

(d) __________other____

____

40. In your opinion, are there things which most people in your community would like to do as a result of the proposed Hydro development while there is still work for wages available in construction camps?

(a) __________Yes

(b) __________No

41. If "yes", what?

(a) __________have a full time job

(b) __________have a job with time off to hunt and fish

(c) __________acquire skills that could be used to get other jobs

(d) __________make sure that any disruption is adequately compensated for

(e) __________other

42. In your opinion, are there things which most people in your community would like to do after the project is finished and there is no longer work available on construction?

(a) __________Yes

(b) __________No

43. If "yes", what?

(a) __________use work experience and training to get job somewhere else

(b) __________move with the family to some place where work is available

(c) __________commute to and from some place of employment

(d) __________other

44. Are you (your husband) working on projects related to the Hydro development?

(a) __________Yes

(b) __________No

45. If "yes", ask:

How long have you/he worked on such projects?

(a) __________one week

(b) __________2 to 3 weeks

(c) __________1 month

(d) __________several months

(e) __________irregularly for several months

(f) __________other

46. What did you/he do before?

(a) __________trapping, fishing

(b) __________odd jobs in community

(c) __________went out to work

(d) __________other

47. Do you think you/he will return to your/his previous type of work when the project in your area is finished?

(a) __________Yes

(b) __________No

48. Do you think you/he would ever want to move to a new Hydro project or some similar type of job away from home?

(a) __________Yes

(b) __________No

49. If "yes" to #48, under what conditions would you/he want to move away from home to work. Probe, e.g.:

(a) __________on a permanent basis

(b) __________so many months each year

(c) __________suitable accommodation available for the family at new job location

(d) __________that wife and family would be prepared to move

(e) __________other______________________________

____

____

50. How do you think you and your family would benefit from moving away from home to work?

____

____

____

____

51. Do you believe you and/or your family would have any problems in moving away from home to work? (Probe)

____

____

____

____

____

52. If "no", ask:

What do you/he do now?

(a) __________trap and fish

(b) __________have a full time job in community

(c) __________odd jobs in community

(d) __________go out to work on other jobs

(e) __________other

53. How long have you/he had this job?

(a) __________less than a year

(b) __________more than a year

(c) __________all his work life

(d) __________other

54. What did you/he do before you/he had this job?

____

____

____

55. Do you think you/he would ever want to move to a new Hydro project or some similar type of job away from home?

(a) __________Yes

(b) __________No

56. If "yes", under what conditions would you/he want to move away from home to work. Probe, e.g.:

(a) __________on a permanent basis

(b) __________so many months each year

(c) __________suitable accommodation available for the family at new job location

(d) __________that wife and family would be prepared to move

(e) __________other______________________________

____

57. How do you think you and your family would benefit from moving away from home to work?

(a) _________have a steady job and more money

(b) _________more opportunity for children

(c) _________other____________________

____

58. Do you believe you and/or your family would have any problems in moving away from home to work? (Probe)

____

____

____

59. As the number of people in your community gets bigger, do you believe that everybody will be able to earn a living at home?

(a) _________Yes

(b) _________No

60. If "yes", how? (Probe)________________________________

____

61. If "no", what do you think people will do about it? (Probe)

____

____

____

____

62. Do you think older teenagers and younger adults in your community think as the elders of the community do about this? Explain_______________

____

____

____

____

I WOULD LIKE YOUR VIEWS ABOUT HOW COMMUNITY DECISIONS ARE MADE IN YOUR COMMUNITY: IT MIGHT HELP IF YOU COULD THINK OF DECISIONS THAT HAVE BEEN MADE RECENTLY:

63. Do you think that major decisions about local community affairs are made in the community by community people?

(a) __________Yes

(b) __________No

64. Now, in your opinion, could you describe for me how decisions about the local affairs of the community are made?

____

____

____

____

65. Is this way of making decisions different now than it used to be?

(a) __________Yes

(b) __________No

66. If "yes", what is the difference?______________________________

____

____

____

67. Do you think that decisions made by people on behalf of the community now, are taken as seriously by the rest of the people in the community as they were say 10-15 years ago? Explain______________________________

____

____

____

____

68. Could you name for me several people whom you believe are most involved in most community decisions?

________________ ________________ ________________

________________ ________________ ________________

________________ ________________ ________________

FINALLY, THERE ARE A COUPLE OF GENERAL QUESTIONS I
WOULD LIKE TO ASK YOU ABOUT:

69. Are there some things in particular about the proposed hydro development that you feel very strongly about?

(a) _________Yes

(b) _________No

70. If "yes", what are those things?

(a) _________destroy a way of life

(b) _________flooding

(c) _________moving houses

(d) _________people not involved enough

(e) _________compensation

(f) _________other

71. What have you done about how you feel? (Probe)

(a) _________talked with Chief and Council

(b) _________talked to Government people

(c) _________written to M.I.B., M.M.F., etc.

(d) _________got in touch with politician

(e) _________talked with neighbours

(f) _________nothing

(g) _________other

72. Why have you done this?

(TO INTERVIEWER: If answer to (c) is "nothing" then it is particularly important to record the "why").

____

____

____

____

73. Are there things not related to Hydro that you feel very strongly about at this time?

(a) __________Yes

(b) __________No

74. If "yes", what are those things?

____

____

____

____

75. What have you done about how you feel? (Probe)

(a) __________talked with Chief and Council

(b) __________talked with Government people

(c) __________written to M.I.B., M.M.F., etc.

(d) __________got in touch with politician

(e) __________talked with neighbours

(f) __________nothing

(g) __________other

76. Why have you done this?

(TO INTERVIEWER: If answer to (c) is "nothing" then it is particularly important to record the "why").

____

____

____

____

NOW, THEN WOULD YOU LET ME HAVE SOME BACKGROUND
INFORMATION ABOUT YOURSELF, PLEASE:

77. Would you tell me your age, please:________________________

78. What is your marital status:

(a) __________single
(b) __________married
(c) __________widowed
(d) __________other

79. How many dependants do you have:

(a) __________children
(b) __________other, e.g., older relatives

80. How far did you go in school:

(a) __________no formal schooling
(b) __________grades 1-4
(c) __________grades 5-8
(d) __________grades 9-12
(e) __________B.T.S.D. (upgrading)
(f) __________technical training, explain____________________
____
(g) __________university

81. About how often do you usually attend church services:

(a) __________rarely
(b) __________once a month
(c) __________2-3 times a month
(d) __________every week

82. Did you vote in the last Band (Council) election:

(a) __________Yes
(b) __________No

83. Did you vote in the last Provincial election?

(a) __________Yes

(b) __________No

84. Did you attend any political meetings having to do with the last Provincial election?

(a) __________Yes

(b) __________No

THANK YOU VERY MUCH FOR YOUR CO-OPERATION

LEADER NOMINATING PANEL

SCHEDULE II

COMMUNITY: DATE:

INTERVIEW NUMBER: TIME:

RESPONDENT: INTERVIEWER:

NOTE: N/A - Not Applicable
N/R - No Response

COULD WE TALK A BIT FIRST OF ALL ABOUT SOME OF YOUR KNOWLEDGE OF WHO THE COMMUNITY LEADERS ARE:

1. In every community there are persons who are influential in making decisions. Some are in elected positions, others are not. What persons in your community are influential in making decisions?

_______________ _______________ _______________
_______________ _______________ _______________
_______________ _______________ _______________

2. Suppose the community wanted to do the following things, which people do you think the community would look to give leadership in getting them done:

(a) _________ _________ _________a series of community bingoes
(b) _________ _________ _________a community sports day
(c) _________ _________ _________a community work activity project eg. logging
(d) _________ _________ _________organize a reception for some important visitor, eg. from M.I.B., Government, Church, etc.
(e) _________ _________ _________community planning related to new housing, hydro, roads and water services

3. If a decision were to be made in Winnipeg that would affect your community, who would be the best contact person (s) in the community to speak for the community?

_______________ _______________ _______________

3. Cont'd.

__________ __________ __________

__________ __________ __________

4. Would you name a decision that has been made recently in the community.

____

____

____

5. Which people would you say played a major part in making that decision?

__________ __________ __________

__________ __________ __________

__________ __________ __________

6. Please name any other people whom you would include in a list of community leaders:

__________ __________ __________

__________ __________ __________

__________ __________ __________

7. Why would you include each of these?

____

____

____

8. Generally, what words best describe for you, the leaders you mentioned? (Probe)

__________ __________ __________

__________ __________ __________

__________ __________ __________

9. In response to the above questions you have mentioned __________________ people. How would you rank them in order of the influence you think they have. (No. 1 being the one with the MOST influence - No. ? being the one with the LEAST influence). .Use Cards.

(1) __________

(2) __________

(3) __________

(4) __________

(5) __________

(6) __________

(7) __________

(8) __________

NOW THEN, I WOULD LIKE YOUR VIEWS ABOUT HOW COMMUNITY DECISIONS ARE MADE IN YOUR COMMUNITY: IT MIGHT HELP IF YOU COULD THINK OF DECISIONS THAT HAVE BEEN MADE RECENTLY:

10. Do you think that decisions about local community affairs are made in the community by community people?

(a) _________Yes

(b) _________No

11. Now would you describe for me how, in your opinion, decisions about the local affairs of the community are made?

____

____

____

____

12. Is this way of making decisions different now than it used to be?

(a) _________Yes

(b) _________No

13. If "Yes", what is the difference?

____

____

____

____

14. Do you think that decisions made by people on behalf of the community now are taken as seriously by the rest of the people in the community as they were say 10-15 years ago? Please explain________________________

____

____

FINALLY, THERE A COUPLE OF GENERAL QUESTIONS I
WOULD LIKE TO ASK YOU ABOUT:

15. Are there some things in particular about the proposed Hydro development that people in the community feel strongly about?

(a) _________Yes
(b) _________No

16. If "Yes", what are those things?

____

____

____

17. What, in your view, have people done about how they feel?

(a) _________talked with Chief
(b) _________talked to Government people
(c) _________talked to neighbours
(d) _________talked to politician
(e) _________written letter to____________________
(f) _________attended meeting
(g) _________nothing
(h) _________other

18. If they have done nothing, why do you think they haven't?

____

____

____

19. Do you believe there are things not related to Hydro that the people of the community feel strongly about?

(a) __________Yes
(b) __________No

20. If "yes", what are those things?

____

____

____

21. What in your view are the people doing about how they feel?

(a) __________talking to their Chief (Mayor) and Council
(b) __________talking to Government people
(c) __________talking to politicians
(d) __________taking up matter with M.I.B., M.M.F.
(e) __________writing letters
(f) __________nothing
(g) __________other

22. If they are doing nothing, why do you think this is so?

____

____

____

____

NOW, THEN WOULD YOU LET ME HAVE SOME BACKGROUND INFORMATION ABOUT YOURSELF, PLEASE:

23. What is your age:______________

24. What is your current occupation:______________________________________

25. What is or has been the nature of your association with the community?

____

____

____

____

26. During what period please: from__________________to__________________

THANK YOU VERY MUCH FOR YOUR CO-OPERATION

LEADER NOMINEES

SCHEDULE III

COMMUNITY: DATE:

INTERVIEW NUMBER: TIME:

RESPONDENT: INTERVIEWER:

NOTE: N/A = Not Applicable
N/R = No Response

MAY WE, FOR A MINUTE OR SO, TALK ABOUT LEADERSHIP IN YOUR COMMUNITY:

1. In every community there are persons who are influential in making decisions. Some are in elected positions, others are not. What persons in your community are influential in making decisions?

______________ ______________ ______________
______________ ______________ ______________
______________ ______________ ______________

2. Suppose the community wanted to do the following things, which people do you think the community would look to to give leadership in getting them done:

(a) __________ __________ __________ a series of community bingoes
(b) __________ __________ __________ a community sports day
(c) __________ __________ __________ a community work activity project, eg. logging
(d) __________ __________ __________ organize a reception for some important visitor, eg. from M.I.B., Government, Church, etc.
(e) __________ __________ __________ community planning related to new housing, hydro, roads and water services

3. Please list any other people not mentioned so far whom you would include in a list of community leaders.

______________ ______________ ______________
______________ ______________ ______________

4. Why would you include these people as leaders?

____
____
____
____

5. Generally, what words best describe for you, the leaders you have mentioned? (Probe)

____________ ____________ ____________
____________ ____________ ____________
____________ ____________ ____________

6. In response to the above questions you have mentioned __________ people. How would you rank them in order of the influence you think they have? (No. 1 being the one having MOST influence - No. ? being the one with the LEAST influence). Use Cards.

(1) ________
(2) ________
(3) ________
(4) ________
(5) ________
(6) ________
(7) ________
(8) ________

PERHAPS YOU CAN TELL ME HOW YOU PERSONALLY RELATE
TO SOME OR ALL OF THESE LEADERS:

7. Of the leaders you have mentioned, which ones do you work with or have you worked with most often in community affairs?

____________ ____________ ____________
____________ ____________ ____________
____________ ____________ ____________

8. What other kinds of contact do you have with those you have mentioned as leaders in #7 above?

(a) __________visit with them in your home

(b) __________have visits from them in your home

(c) __________party with them

(d) __________hunt with them

(e) __________seek their advice

(f) __________other, explain______________________________

____

____

NOW I WOULD LIKE TO ASK YOU SOME QUESTIONS ABOUT
HOW YOU THINK DECISIONS ARE MADE IN YOUR COMMUNITY:

9. Do you think that major decisions about local community affairs are made in the community by community people?

(a) __________Yes

(b) __________No

10. Would you name a decision that has been made recently in the community?

____

____

11. Which people would you say played a major part in making that decision?

__________________ __________________ __________________

__________________ __________________ __________________

__________________ __________________ __________________

12. Now, could you describe for me how, in your opinion, decisions about local affairs of the community are made:

____

____

____

13. Is this way of making decisions different now than it used to be?

(a) __________Yes

(b) __________No

14. If "yes", what is the difference?

____

____

____

____

15. Do you think that decisions made by people on behalf of the community now are taken as seriously by the rest of the people in the community as they were say 10-15 years ago? Please explain______________________________

____

____

____

____

COULD YOU TELL ME NOW SOMETHING ABOUT HOW YOU
ARE INVOLVED IN THE AFFAIRS OF YOUR COMMUNITY,
FOR EXAMPLE:

16. How many councils, committees, boards, etc., are you a member of locally?

(a) __________in your community

(b) __________outside your community

17. Have you ever been elected to attend a conference or meeting outside your community?

(a) __________Yes

(b) __________No

18. If "yes", how many times? __________

19. Have you ever been appointed to attend a conference or meeting outside your community?

(a) __________Yes

(b) __________No

20. If "yes", how many times? __________

21. If "yes", by whom were you appointed? ________________________

22. If you have represented your community at conference or meetings, did you tell the community what the conference was about after the conference was over?

(a) __________Yes

(b) __________No

23. If "yes", how did you do this?

(a) __________called a meeting for this purpose

(b) __________reported through regular Council meeting

(c) __________talked with individuals

(d) __________prepared and distributed a written report

(e) __________other, explain________________________________

____

____

FINALLY, THERE ARE A COUPLE OF GENERAL QUESTIONS
I WOULD LIKE TO ASK YOU ABOUT:

24. Are there some things in particular about the proposed Hydro development that you feel very strongly about?

(a) __________Yes

(b) __________No

25. If "yes", what are those things?

____

____

26. What have you done about how you feel? (Probe)

(a) __________talked with Chief
(b) __________talked with Government people
(c) __________talked with neighbours
(d) __________talked with politician
(e) __________written letter to______________________________
(f) __________attended meeting
(g) __________nothing
(h) __________other

27. Why have you done this?

(TO INTERVIEWER: If answer to #26 is nothing, then it is particularly important to record the "why").

____

____

____

28. Are there things not related to Hydro that you feel very strongly about at this time?

(a) __________Yes
(b) __________No

29. If "yes", what are those things?

____

____

____

30. What have you done about how you feel? (Probe)

(a) __________talked with Chief
(b) __________talked with Government people
(c) __________talked with neighbours
(d) __________talked with politician
(e) __________written letter to______________________________
(f) __________attended meeting
(g) __________nothing NOTHING

31. Why have you done this?

(TO INTERVIEWER: If answer to #30 is nothing, then it is particularly important to record the "why").

____

____

____

NOW THEN, WOULD YOU LET ME HAVE SOME BACKGROUND INFORMATION ABOUT YOURSELF, PLEASE:

32. What is your age:__________

33. What is your marital status?

(a) __________married

(b) __________single

(c) __________other (eg. widowed)

34. How many dependents do you have?

(a) __________children

(b) __________other (eg. older relatives)

35. What are your main sources of employment?

(a) __________trapper

(b) __________fisherman

(c) __________housewife

(d) __________labourer

(e) __________other____

36. How much schooling have you had?

(a) __________no formal schooling

(b) __________grades 1-4

(c) __________grades 5-8

(d) __________grades 9-12

(Cont'd. next page)

36. Cont'd.

(e) _________ B.T.S.D. (Upgrading)

(f) _________ technical training, explain ___________________

____

(g) _________ some university

THANK YOU VERY MUCH FOR YOUR CO-OPERATION

COMMUNITY ORGANIZATION OFFICIALS

SCHEDULE IV

COMMUNITY:

DATE:

INTERVIEW NUMBER:

TIME:

GROUP:

INTERVIEWER:

RESPONDENTS IN GROUP:
1. ____________________
2. ____________________
3. ____________________
4. ____________________
5. ____________________
6. ____________________

NOTE: N/A = Not Applicable
N/R = No Response

COULD YOU TELL ME SOMETHING ABOUT HOW YOUR COMMITTEE, COUNCIL, ETC., WORKS WITH OTHER GROUPS IN YOUR COMMUNITY, EG.:

1. What do you think is the main purpose of your organization, committee, council, etc. (Probe)

____

____

____

2. Does your council, organization, committee, etc., work with other groups in your community?

(a) ________Yes

(b) ________No

3. If answer to above is "yes", name the other organizations with which your organization, council, etc., has the most frequent contact:

_______________ _______________

_______________ _______________

_______________ _______________

4. Why does your organization, committee, etc., have this contact with other groups in the community?

____

____

____

____

WHAT ABOUT CONTACT WITH OTHER SIMILAR GROUPS
OUTSIDE YOUR OWN COMMUNITY:

5. Does your organization have regular contact with organizations or agencies outside the community?

(a) __________Yes

(b) __________No

6. If "yes", how frequent is that contact?

(a) __________close to once a week

(b) __________closer to once a month

(c) __________about once a year

(d) __________other_______________________________

____

I WONDER IF YOU COULD TELL ME SOMETHING ABOUT
HOW INDEPENDENT YOU BELIEVE YOUR ORGANIZATION,
COMMITTEE, COUNCIL, ETC., IS, FOR EXAMPLE:

7. Does your organization have to get permission from outside your organization before making decisions to change things?

(a) __________sometimes

(b) __________never

(c) __________always

8. Is your organization expected to report regularly to people outside your community on the things it does?

(a) __________Yes

(b) __________No

9. Does your organization have visits from people representing the outside agencies or organizations that it relates to?

(a) __________Yes

(b) __________No

10. If "yes", how often?

(a) __________monthly

(b) __________twice a year

(c) __________yearly

(d) __________other____

____

11. When people in the community have concerns about the way your organization, committee, council, etc., does things, are these concerns:

(a) __________attended to locally

(b) __________referred to some agency outside for a decision

(c) __________other, explain__________________________________

____

12. Do you believe your organization is free to get involved in the general affairs of the community?

(a) __________Yes

(b) __________No

13. Does your organization, council, committee, get involved along with other similar groups in other communities in matters of general interest and concern to your community? Explain.

____

____

____

____

NOW I WOULD LIKE TO GET YOUR VIEWS ABOUT HOW
YOU THINK DECISIONS ARE MADE IN YOUR COMMUNITY:

14. Do you think that decisions about local community affairs are made in the community by community people?

(a) _________Yes

(b) _________No

15. Now, could you describe for me how in your opinion, decisions about the local affairs of your community are made?

____

____

____

____

____

____

____

16. Is the way of making decisions now different from the way it used to be?

(a) _________Yes

(b) _________No

17. If "yes", what is the difference?

____

____

____

18. Do you think that decisions made on behalf of the community now are taken as seriously by local people in the community as they used to be in the past?

(a) __________Yes

(b) __________No

FINALLY, THERE ARE A COUPLE OF GENERAL QUESTIONS
I WOULD LIKE TO GET YOUR RESPONSE TO:

19. Are there some things in particular about the proposed Hydro development that your group feels very strongly about?

(a) __________Yes

(b) __________No

20. If "yes", what are those things?

____

____

____

21. What have you done as a group about how you feel? (Probe)

(a) __________talked with Government representatives

(b) __________talked with politician

(c) __________taken it up with M.I.B., M.M.F.

(d) __________written letters to______________________________

____

(e) __________nothing

(f) __________other____

____

22. Why have you done this?

(TO INTERVIEWER: If answer to #21 is nothing, then it is particularly important to record the "why").

____

____

____

23. Are there things not related to Hydro that your group feels very strongly about at this time?

(a) __________Yes

(b) __________No

24. If "yes", what are those things?

____

____

____

25. What has your group done about how you feel? (Probe)

(a) __________talked with Government representatives

(b) __________talked with politician

(c) __________taken it up with M.I.B., M.M.F.

(d) __________written letters to________________________________

____

(e) __________nothing

(f) __________other____________________________________

____

26. Why have you done this?

(TO INTERVIEWER: If answer to #25 is nothing, then it is particularly important to record the "why").

____

____

____

NOW THEN, WOULD EACH OF YOU TELL ME SOMETHING
ABOUT YOURSELF:

27. What is your age:__________

28. What is your marital status:

(a) __________married

(b) __________single

29. What are your main sources of employment?

(a) __________trapper

(b) __________fisherman

(c) __________housewife

(d) __________labourer

(e) __________other______________________________________

30. How much schooling have you had?

(a) __________no formal schooling

(b) __________grades 1-4

(c) __________grades 5-8

(d) __________grades 9-12

(e) __________B.T.S.D. (Upgrading)

(f) __________technical training, explain____________________

____

(g) __________some University

THANK YOU VERY MUCH FOR YOUR CO-OPERATION

GUIDELINE TOPICS FOR GROUP
DISCUSSION WITH STUDENTS ATTENDING
R. D. PARKER COLLEGIATE, THOMPSON, MANITOBA

SCHEDULE V

INFORMATION:

What are the main sources of information to people in Nelson House about a) news about local events, b) news about outside happenings, c) Hydro development particularly? Is the information they receive a)understandable, b) accurate, c) adequate? How might people go about getting the information they require?

FEELINGS:

Are there things which people in the community are concerned about regarding the proposed Hydro development? Have people done anything about these concerns? If they have done nothing, why do you think this is so? Do you (students) think that there are things which they might do about these concerns?

Are there things other than the Hydro development which are of major concern to the people in Nelson House? Do you (students) think that there are things which they might do about these concerns?

What effects do you (students) think that recent developments (eg. road, Hydro, television, telephone) are likely to have on Nelson House?

LEADERSHIP:

Who are the leaders in the community? How would you arrange them in order of importance? What do you think are the attributes or qualities of leaders, (what makes a leader a leader)?

COMMUNITY ORGANIZATION:

What organizations, councils and committees are there in Nelson House? How would you arrange them in order of importance? Do these groups have any power (do they influence community decisions)? Do these groups work together for the general community good?, or do they work independently?

COMMUNITY AUTONOMY:

Are decisions of local concern made locally?, or must they be referred to the people (agencies) outside? Is the influence, respect or power of the Chief and Council increasing, decreasing, or staying the same? What things, if any, might you do differently if you were Chief and Council?

INFLUENCES:

Who or what influences the behaviour of a child growing up in Nelson House? How would you arrange these influences in order of importance?

Do you think young people in any way influence the way your elders think or the things they do?

RECREATION:

How do you spend your spare time when in Nelson House? When in Thompson?

GENERAL:

What do you like most about living in Nelson House?
What do you like least about living in Nelson House?
What do you like most about living in Thompson?
What do you like least about living in Thompson?

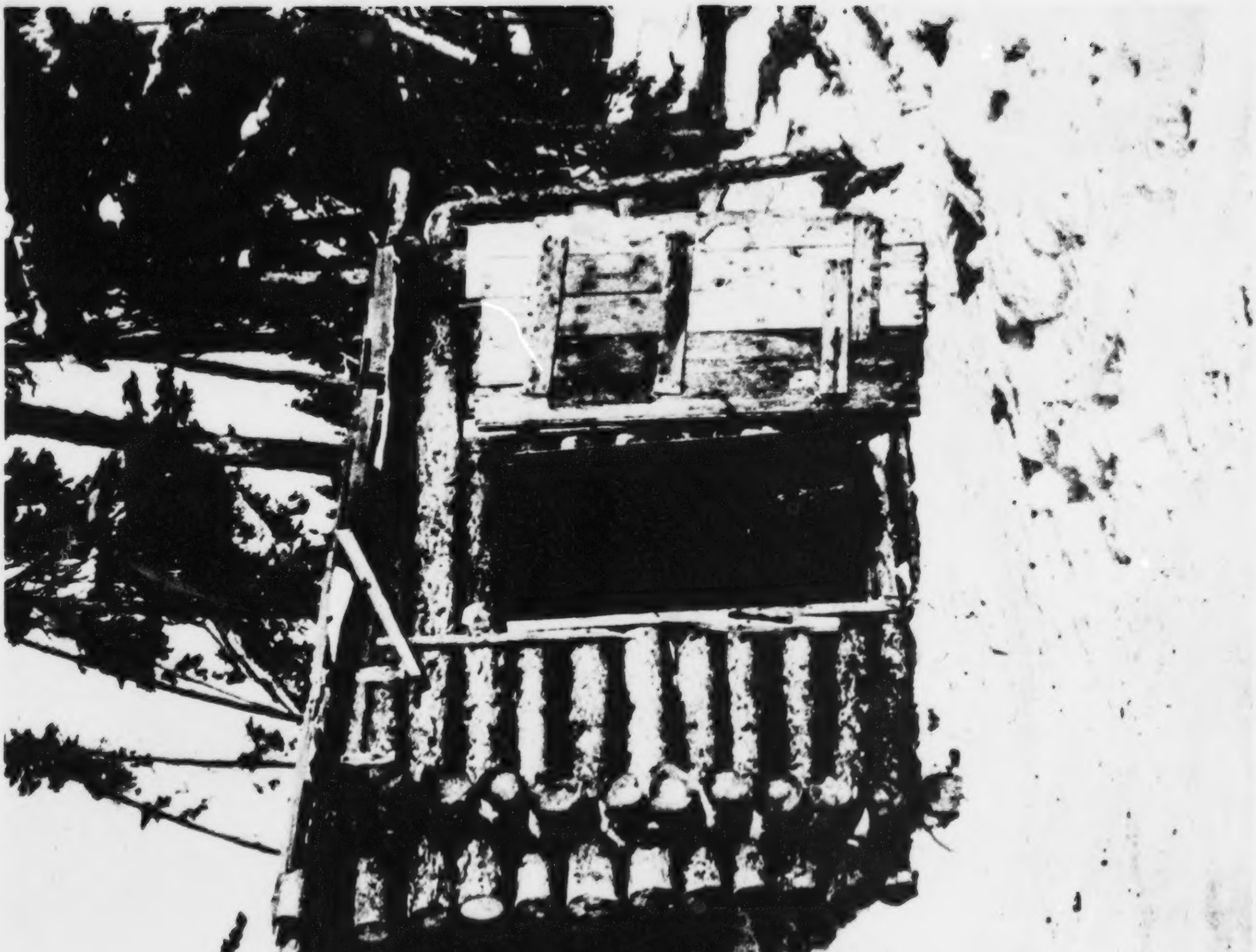
What do you think are the most important needs in Nelson House at this time? Do the older people think the same about this?

What would be the advantages of people moving away to work? Disadvantages?

Do you think that eventually people will have to move out? What alternatives do you see?

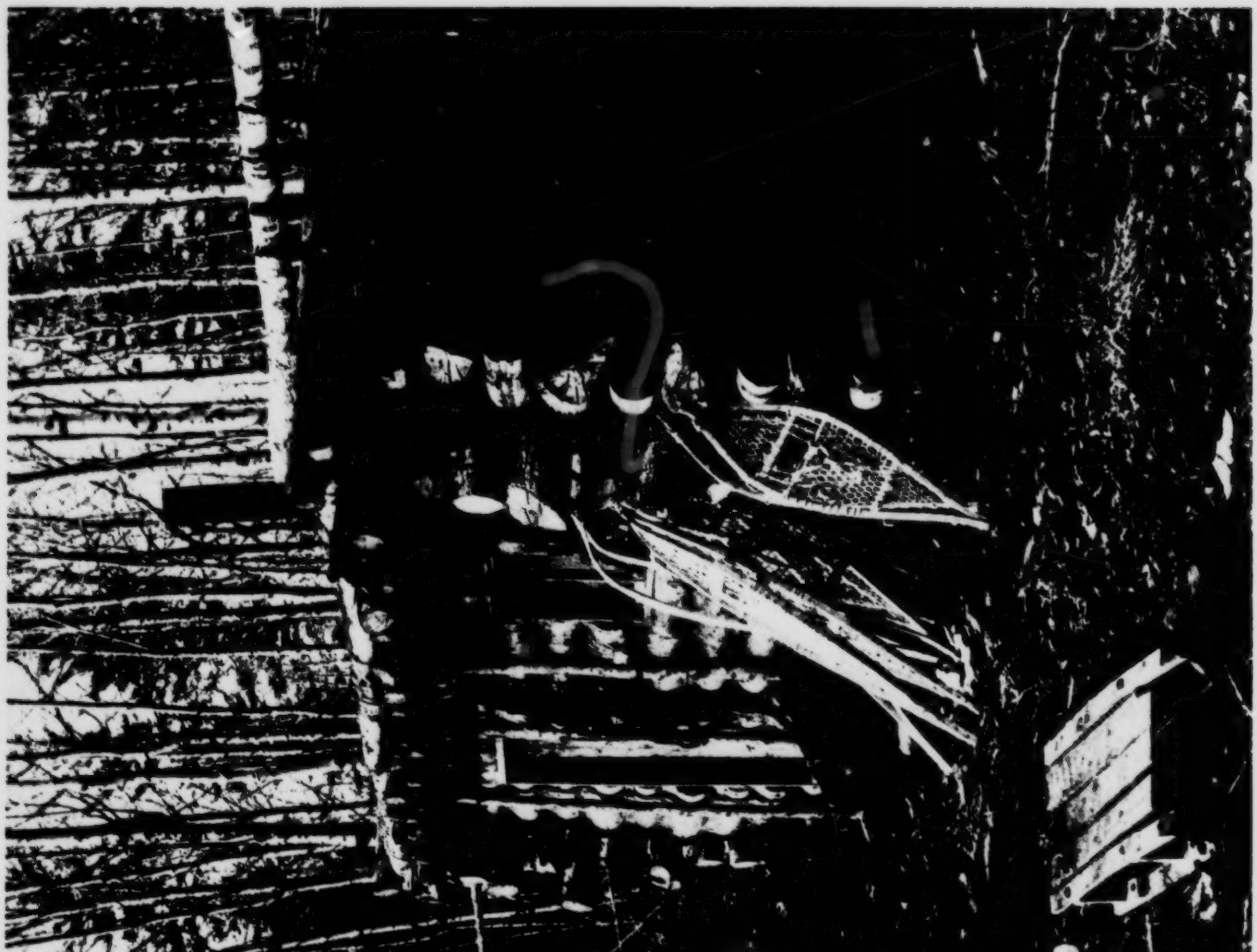
APPENDIX II

PHOTOGRAPHS OF INTEREST



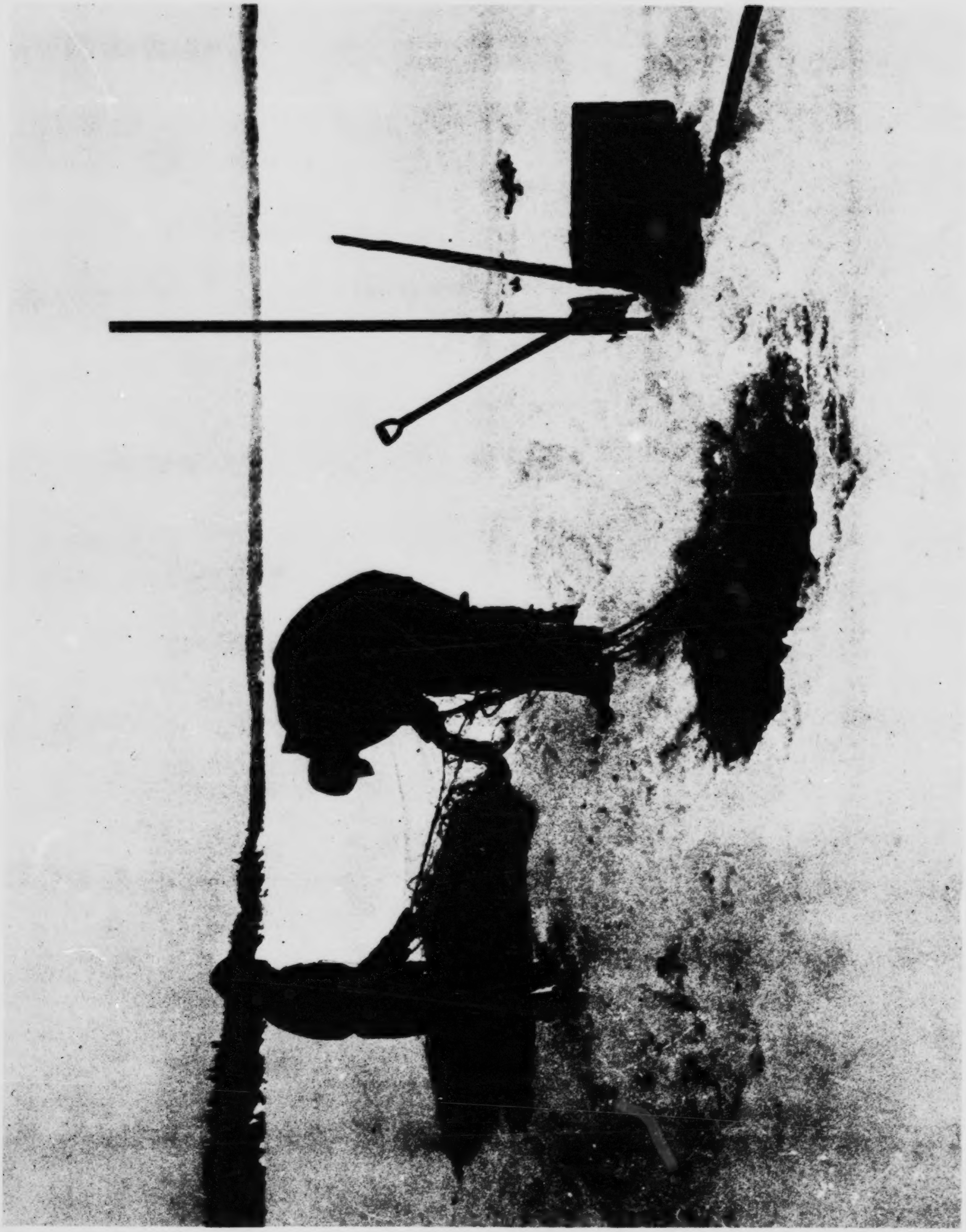
Trapper's cabin

Trapper's family on the trapline



Trapper's cabin during spring trapping season

Preparing for ice harvest



Winter fishing

The old: Loon Narrows fish packing station on Southern Indian Lake

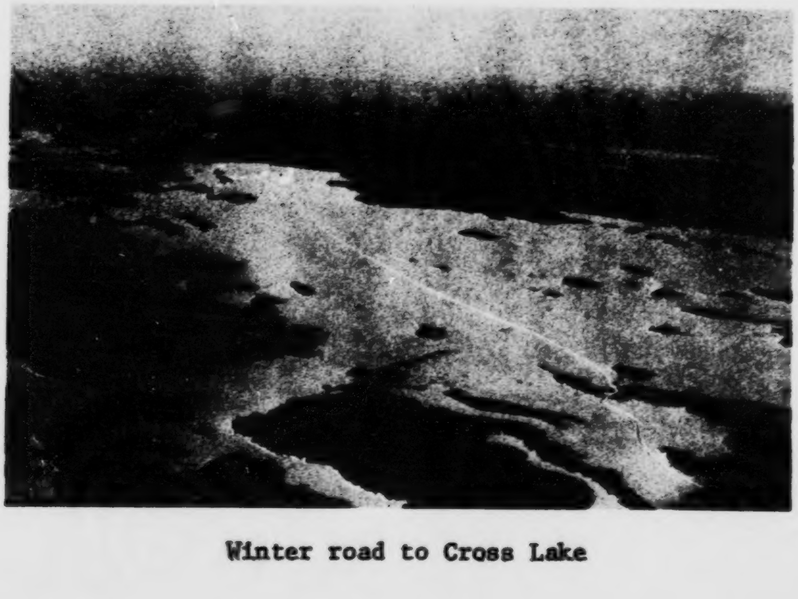
The new: Loon Narrows fish packing station on Southern Indian Lake

Gathering "crunnicks" (wood)

The old: South Indian Lake Settlement
1973

The new: South Indian Lake
town center under construction
1974

Winter road to South Indian Lake



Winter road to Cross Lake

LIST OF SOURCES

LIST OF SOURCES

A large number of government and other agencies, publications, files and other material was consulted during this study. The following list outlines the more important sources.

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3. Local and Regional offices, Department of Indian and Northern Affairs
4. Local and Regional offices, Department of Manpower and Immigration
5. Marine Services, Ministry of Transport
6. Regional office, Department of Public Works
7. Regional offices, Department of Regional Economic Expansion (ARDA IIIB)
8. R.C.M.P., Ministry of Solicitor General
9. Secretary of State Department
10. Statistics Canada Publications
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MANITOBA GOVERNMENT AGENCIES

1. Department of Mines, Resources and Environmental Management
2. Department of Northern Affairs
3. Department of Co-operative Development
4. Department of Public Works

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LOCAL GOVERNMENT AGENCIES AND ORGANIZATIONS

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2. Community Councils; Norway House, Cross Lake, South Indian Lake
3. Fisheries Co-operatives; Norway House, Cross Lake, South Indian Lake
4. Local Fur Councils; Norway House, Cross Lake, Nelson House, South Indian Lake

CROWN CORPORATIONS AND OTHER ORGANIZATIONS

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3. Department of Psychology, University of Manitoba

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12. Manitoba Museum of Man and Nature

13. Natural Resources Institute, University of Manitoba

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LAKE WINNIPEG, CHURCHILL AND NELSON RIVERS STUDY BOARD

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* * *

Volume

2

lake winnipeg, churchill & nelson rivers study board CANADA MANITOBA 1971 - '75

social and economic studies

vol.2

technical report appendix 8

LAKE WINNIPEG, CHURCHILL AND NELSON RIVERS STUDY BOARD

APPENDIX 8 - SOCIAL AND ECONOMIC STUDIES, VOL. 2

A - CROSS LAKE COMMUNITY PROFILE

B - NELSON HOUSE COMMUNITY PROFILE

C - SOCIAL AND ECONOMIC IMPACT OF THE NELSON RIVER HYDRO DEVELOPMENT (WITH EMPHASIS ON SOUTH INDIAN LAKE)

CROSS LAKE COMMUNITY PROFILE

by

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for

THE LAKE WINNIPEG, CHURCHILL AND NELSON RIVERS STUDY BOARD

SPECIAL NOTE

THE CONCLUSIONS AND RECOMMENDATIONS CONTAINED IN THIS APPENDIX ARE THOSE OF THE AUTHOR(S) AND ARE NOT NECESSARILY THE SAME AS THE CONCLUSIONS AND RECOMMENDATIONS OF THE LAKE WINNIPEG, CHURCHILL AND NELSON RIVERS STUDY BOARD AS EXPRESSED IN THE SUMMARY REPORT AND THE TECHNICAL REPORT.

PREFACE

This paper is one of a series of technical reports prepared or initiated by the Social and Economic Impact Study Team as background to a report entitled Social and Economic Impact Study of the Lake Winnipeg,Churchill-Nelson Rivers Hydro Development.

The purpose of the impact study is to identify the potential social and economic impacts of hydroelectric power projects on remote northern Manitoba communities, and to recommend mitigation and development measures.

Technical reports examining the social and economic characteristics of each community within the study area provided a baseline against which to formulate conclusions and recommendations. A brief summary of these community profiles appears in the general report. The paper "Cross Lake Community Profile" provides a more detailed account of the information and data underlying the conclusions and recommendations pertaining to the community of Cross Lake.

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I. BACKGROUND

A. LOCATION

The community of Cross Lake is located at the southeast corner of Cross Lake. It is approximately 77 miles south of Thompson, 45 miles north of Norway House and 39 miles southeast of Wabowden. The populated areas, which are scattered throughout Indian Reserve #19 and adjacent Crown Lands, extend for about 6 miles along the east shore and 4 miles along the west shore of the Nelson River at Cross Lake. (See Figures 1 and 2.)

B. GEOLOGY

The community is located on the Precambrian Shield which consists largely of granite rock overlain with glacial clay or muskeg swamp. Of a total of 14,840 acres, 12,485 acres are woodland, 1,855 acres are taken for community use, and 500 acres are swamp, marsh, and water. The vegetation consists of black and white spruce, jack pine, poplar, balsam fir, birch, and willow. Large deposits of clay and soil support substantial vegetation. For this reason, game habitat is generally good.

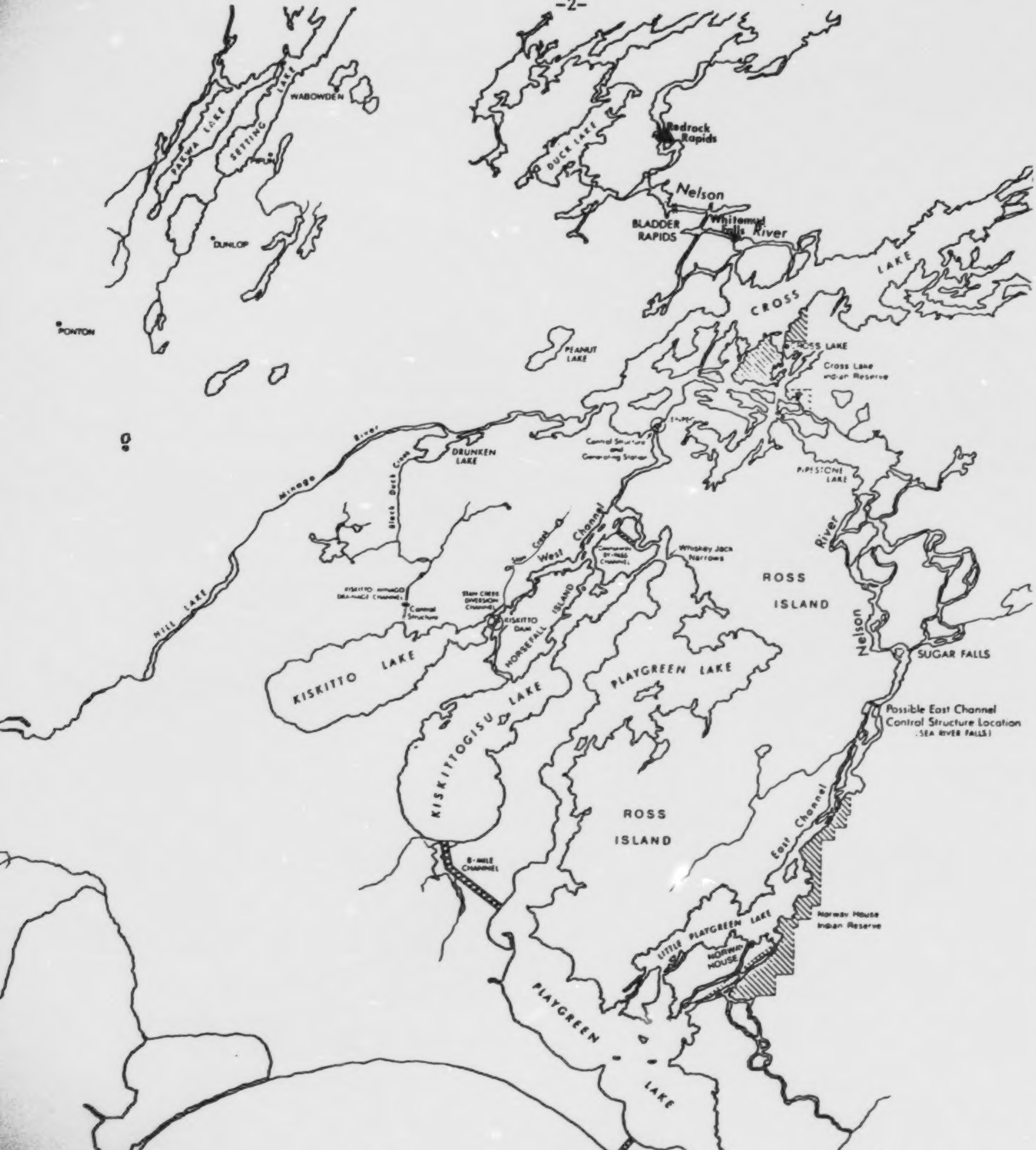
PAKWA LAKE
SETTING LAKE
WABOWDEN
DUNLOP
PONTON
DUCK LAKE
Bedrock Rapids
Nelson
BLADDER RAPIDS
Whitemud Falls
River
CROSS
LAKE
PEANUT LAKE
CROSS LAKE
Cross Lake Indian Reserve
Control Structure and Generating Station
PIPESTONE LAKE
DRUNKEN LAKE
Minago River
Black Duck Creek
HILL LAKE
KISKITTO MINAGO DRAINAGE CHANNEL
Control Structure
STAN CREEK DIVERSION CHANNEL
KISKITTO DAM
West Channel
BY-PASS CHANNEL
Whiskey Jack Narrows
ROSS ISLAND
River
Nelson
SUGAR FALLS
KISKITTO LAKE
HORSEFALL ISLAND
KISKITTOGISU LAKE
PLAYGREEN LAKE
Possible East Channel Control Structure Location (SEA RIVER FALLS)
ROSS ISLAND
East Channel
8-MILE CHANNEL
Norway House Indian Reserve
LITTLE PLAYGREEN LAKE
NORWAY HOUSE
PLAYGREEN LAKE
2-MILE CHANNEL
WARREN LANDING
LAKE WINNIPEG

Figure 1

THE OUTLET LAKES

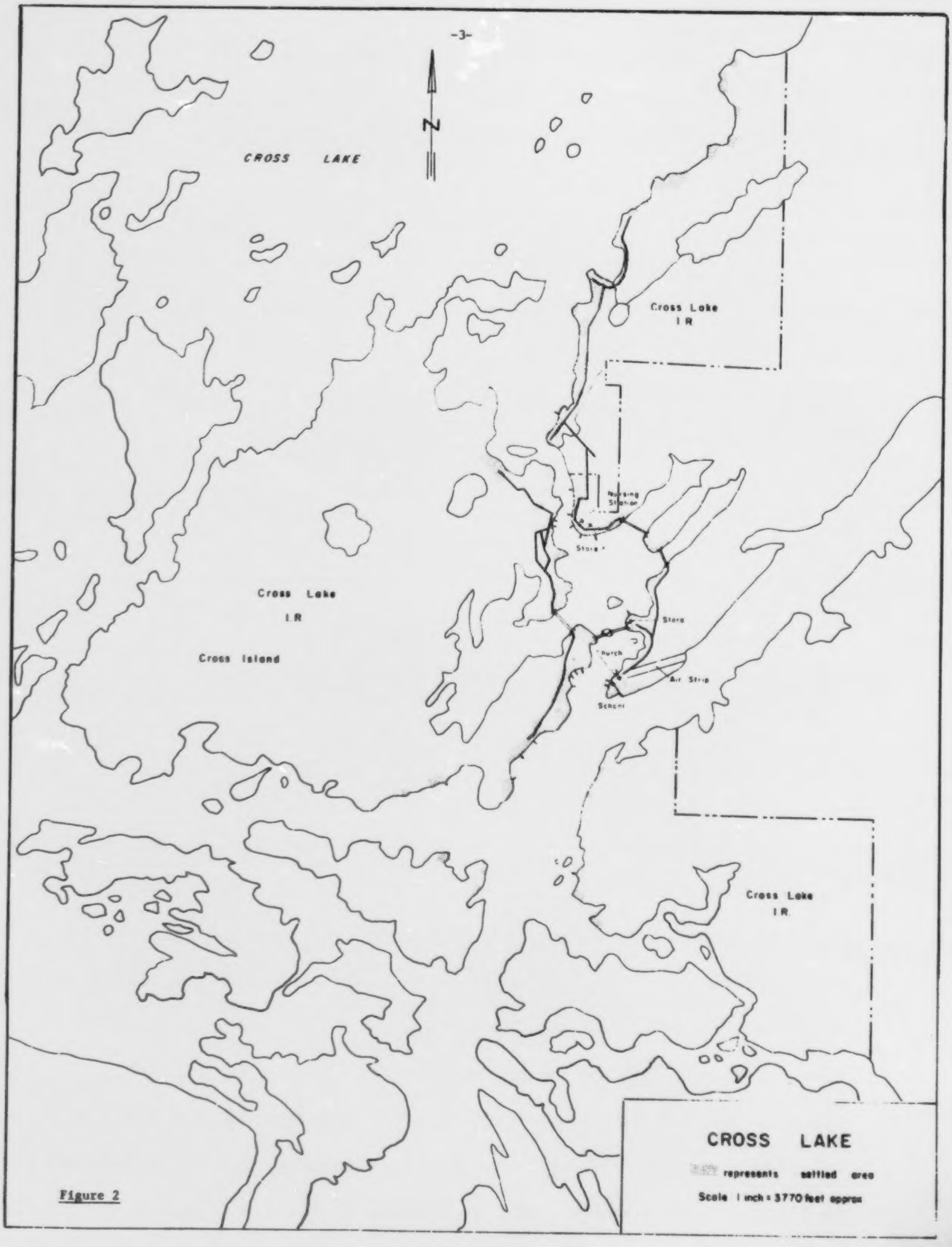
N
CROSS LAKE
Cross Lake
I.R
Nursing Station
Store
Cross Lake
I.R
Store
Church
Air Strip
School
Cross Island
Cross Lake
I.R.
CROSS LAKE
represents settled area
Scale 1 inch = 3770 feet approx

Figure 2

II. THE LAKE WINNIPEG REGULATION PROJECT

The community of Cross Lake has been and will continue to be affected by the Lake Winnipeg, Churchill and Nelson Rivers hydroelectric power development.

In order to assess the character and extent of such impacts, it is necessary to have a clear understanding of:

a) the components of the development project which relate to the community, and

b) the changes in the water regime that are expected to occur as a result of the project.

A. PROJECT DESCRIPTION

In order to generate additional hydroelectric power, Manitoba Hydro has been issued a licence to regulate Lake Winnipeg within a range of 711 feet ASL (above sea level) and 715 feet ASL. Under the terms of the licence three channels, the Kiskitto Dam and diversion structure and the Jenpeg control structure and power generating facility, are being constructed. The Jenpeg control structure with an average forebay level of 715 feet ASL, is licenced to allow a minimum flow of 25,000 cfs with maximum daily fluctuations in flows not to exceed 15,000 cfs. Figure 2 illustrates the most significant components of the project.

1. Two Mile Channel

This channel will provide a connection between Lake Winnipeg and Playgreen Lake west of Warren's Landing. The channel will be an average of 410 feet wide with a minimum depth of 25 feet and will accommodate a median flow of approximately 2.0 feet per second (fps). The main purpose of the channel is to increase the flow of water into Playgreen Lake from Lake Winnipeg to enable more power production further down the Nelson River.

2. Eight Mile Channel

This channel will connect Kiskittogisu Lake and Playgreen Lake via the Kiskittogisu River and a man-made channel. The channel will be approximately 1,000 feet wide at the Playgreen Lake end and narrow to 425 feet at the Kiskittogisu Lake end. The depth will be about 25 feet throughout. The median flow through this channel is expected to be 2.0 fps. Again, the main purpose of the channel is to increase flows to the Nelson River to enable more power production.

3. The Ominawin Pass

This channel will divert flows around the Ominawin Rapids to the West Channel of the Nelson River. It will be approximately 1,500 feet wide and 25 feet deep with a median flow of 2.0 fps. Again, the purpose of this channel is to facilitate flow down the Nelson River.

Work on these three channels is underway and they are scheduled for completion in November 1974.

4. Kiskitto Lake Regulation

A number of smaller dams and dykes are being constructed in order to provide more hydraulic control and to restrict flooding within this area. The lake will be controlled by a dam at the outlet to the West Channel and a channel and control structure from Lake Kiskitto to Black Duck Creek. These structures will result in a decrease in the range of fluctuation in levels on the lake thus enabling better waterfowl production management. The work is scheduled for completion in June, 1974.

5. Jenpeg Control Structure and Generation Station

This structure is located at the outlet of the West Channel of the Nelson River into Cross Lake. Its primary purpose is to control water levels and flows on Lake Winnipeg to facilitate power generation on the Lower Nelson River. A secondary function is to generate power. Work on this facility has been underway since 1972. The control structure is scheduled to go into operation in November 1974 while the generating station will be operable by 1977. The Jenpeg structure will provide a permanent bridgehead across the West Channel, and has resulted in the construction of an all weather road from Provincial Road #373 to Jenpeg. This road has caused immediate changes in transportation patterns in the area which can be expected to continue into the future.

6. East Channel Control Structure

If built, this structure will control water levels and flows on the East Channel of the Nelson River. The most likely location for the structure is Sea River Falls (approximately 8 miles downstream from Norway House). The purpose of the structure would be to control flows down the East Channel to allow for increased power production at the Jenpeg generating station. However, information to date indicates that construction is doubtful as the increased power production does not appear to justify the cost. It should be noted that, if built, the structure would provide a bridgehead across the East Channel and probably result in an all weather road into Norway House.

This development would have substantial effects on local transportation patterns and other social and economic factors.

B. WATER REGIME

1. The Unregulated State

a) Levels

Under unregulated conditions on Cross Lake, the average annual mean monthly level is expected to be 678.54 feet ASL (above sea level). This level will vary from a low of 674.77 feet ASL to 685.09 feet ASL. Generally, water levels will be lowest during the months of February, March and April and highest during the summer months of July and August. (See Figure 3.)

b) Flows

Flows will vary substantially under unregulated conditions. The total flow of the Nelson River into Cross Lake will be approximately 72,700 cfs. (cubic feet per second) of which about 80% will be routed through the West Channel and 20% through the East Channel. The flows will vary substantially over the year. On the East Channel, the average winter flow will be approximately

CROSS LAKE WATER LEVELS

REGULATED AND UNREGULATED CONDITIONS

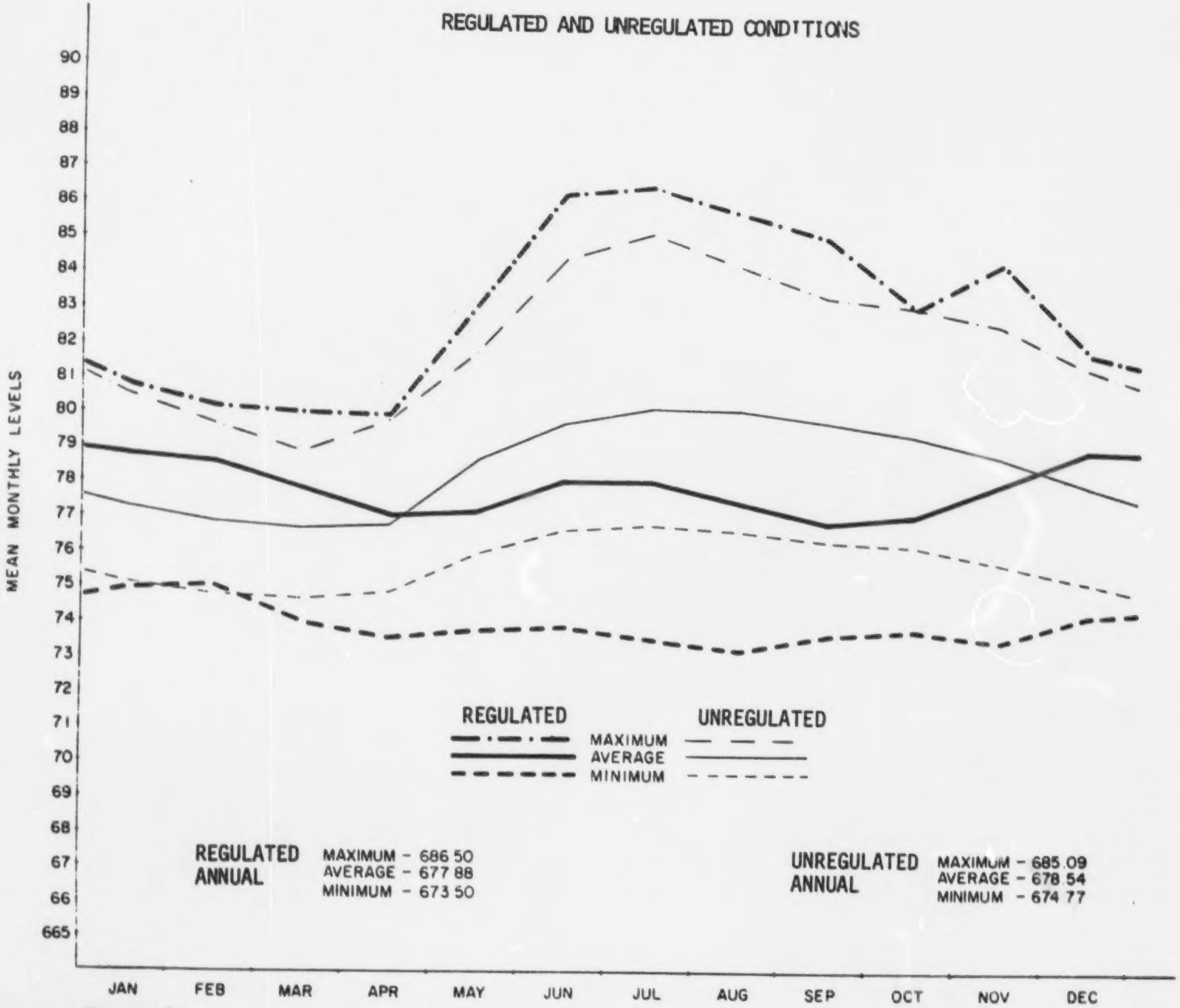

Figure 3

8,300 cfs., while in summer, the flow will average 15,500 cfs. The West Channel will vary from an average winter flow of about 43,300 cfs. to an average summer flow of 75,500 cfs.

2. The Regulated Condition

a) Levels

Under regulation, the Jenpeg control structure has been licenced to maintain water levels on Lake Winnipeg between 711 to 715 feet. Further, Manitoba Hydro's operating licence stipulates a minimum flow from Lake Winnipeg of 25,000 cfs. The results of regulation on Cross Lake water levels and flows will generally be a reversal of the natural annual water level fluctuations. The average regulated mean monthly level will be about 677.88 feet ASL, while the minimum level will be approximately 673.40 feet ASL and the maximum 686.50 feet ASL. An examination of Figure 3, shows that in winter the levels will generally be 1-1½ feet higher than under unregulated conditions, while in summer, the levels will be about 1½ to 2¼ feet lower than under unregulated conditions.

b) Flows

Flow patterns will also be altered substantially under regulation. On the West Channel the average flow under regulation will be approximately 86,500 cfs. A maximum allowable day to day fluctuation of 15,000 cfs. is specified in Hydro's licence. However, there will be substantial fluctuations in the months of November and December as a result of Manitoba Hydro operational plans. These plans are discussed in detail below. As is apparent, flows on the West Channel will increase substantially. A similar situation is expected to exist for the East Channel. The summer average flow will be about 18,200 cfs. under regulation as opposed to 15,500 cfs. without regulation. Winter flows are expected to average 10,900 cfs. with regulation, compared with 8,300 cfs. under unregulated conditions.

c) The Cutback

As mentioned above, there will be major deviation from Manitoba Hydro's normal operating procedures during the months of November and December. In order to allow a smooth ice cover to form upstream of Jenpeg, Hydro plans to reduce the flow at Jenpeg to about 50,000 cfs. during freeze-up. This is expected to occur sometime during the month of November. The cutback will last for approximately two or three weeks and in most years will result in a drop of between 2½ and 3½ feet in Cross Lake water levels. The maximum drop in water levels is estimated to be between 4 and 5 feet. After ice formation, it is planned to gradually increase flows through Jenpeg until normal regulated levels are achieved toward the end of December. This increase will result in a rise in water levels on Cross Lake to levels achieved before cutback or higher. It should be noted that this information is of a preliminary nature. Further, the changes in levels resulting from the cutback are not represented in Figure 3.

III. HISTORY OF CROSS LAKE COMMUNITY

A. INTRODUCTION

Since the Indian migration out of Asia some 40,000 years ago, most Indian populations have been mobile. Because his livelihood was dependent on hunting and fishing, the hunter-fisherman travelled to areas of seasonal abundance where he developed the skills and technology required for the survival of his family and himself.

In the early stages of development, family groups were entirely self-sufficient. Everything required for daily subsistence was gathered or harvested through the direct efforts of family members. Thus the people developed a nomadic way of life which evolved from the constant search for food, clothing and shelter, and which revolved around the resources provided by the rivers and forests.

For this reason, most Indian settlements had their beginnings as temporary hunting or fishing camps. Only after the initial contact with the white man's culture and the money economy was there a trend towards establishing permanent communities. As free traders or agents of trading companies pushed inland, natives were able to barter or sell their harvest in return for various items of clothing, food and equipment. This required a permanent location where such transactions could take place. As a result, the temporary camps gradually became meeting places, trading posts, and, eventually, communities.

With the transition from a nomadic society to a permanent community, the basic unit of social organization changed from the family, to the band, and, ultimately, to the community. This was accompanied by new organizational demands on the people. A nomadic people, based on the family unit, has no need to develop systems to deal with such functions as community decision-making, socialization, social control, etc. On the other hand the community, "a combination of social units and systems which perform the major social functions of locality relevance,"[1] is under constant pressure, not only to devise systems to perform community functions, but also to make such revisions as are necessary to keep pace with changing conditions.

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[1] Warren, Roland L., The Community in America, Rand McNally & Co.: Chicago, 1963, p. 9.

B. CROSS LAKE

The Community of Cross Lake followed the general line of development outlined above.

The name "Cross Lake" is the English translation of the Cree name "Pemichigamow," meaning "it lies athwart." The lake was so named because the Nelson River flows across the lake west of the original Hudson Bay trading post. The community took its name from the lake.

1. Pre-Settlement

Cross Lake was part of the waterway travelled by the Indians in the early part of the 18th century. In these years, Island Lake residents established trapping camps at Cross Lake during the winter months. Subsequently, an Indian Band was formed by migration of Swampy Cree natives from surrounding areas.

To the outsider, the life of the Swampy Cree people appeared to be relaxed and uncomplicated. According to a priest who worked among them for many years, "Their attitude toward life is very much like those of the ancient Greeks, and in their gentle and sensitive language one catches glimpses of the Grecian idioms and temperament."[1] Like other native groups, they adopted the nomadic lifestyle associated with the search for food, clothing and shelter.

The first intrusion of the outside world occurred in the 1770's when Canadian pelts were in great demand overseas.

Prior to 1773, between 40 and 50 Hudson Bay Company men penetrated the interior of Canada via Cross Lake. In 1795, a temporary post was established in the vicinity of the present community. However, other than for winter trapping, few natives used the area as indicated by the fact that in 1809 William McKay, a partner of the North West Company, travelled from Cross Lake to and beyond Lake Sipiwesk, a distance of some 60 miles, before meeting any Indian people. It would appear that at that time most natives recognized Norway House as the trading centre for the area and congregated there during the summer months.

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[1] Hall, Frank, "The First Manitobans," The Bison, 1970.

In 1849, Mr. E. McGillvray was in charge of a second temporary Hudson Bay post. However, it was not until 1866 that a permanent Bay post was established. This marked the birth of the community of Cross Lake.

2. 1866 - 1875

The founding of the permanent settlement ushered in a period of rapid change. This period was characterized by the introduction and growth of the money economy. These initial experiences were to have dramatic and lasting effects on the lifestyle of the people.

The Hudson Bay Company had native people in its employ as guides, trappers, fishermen and boatmen; thus many native people were involved in the wage economy. During this period, too, free traders pushed inland, using Indian guides and interpreters. The trader relied upon the natives to draw maps and to instruct him in the use of snowshoes, toboggans and birch bark canoes. More significantly, members of the community gradually developed a dependency upon the trader. In the subsistence stage, the people carried on their traditional pursuits in such a way as to satisfy their own needs and there was little need for contact with the outside world. Any decisions which were required were made by family heads or by a few influential patriarchs. As the people began to rely on purchased goods and outside markets for fur, they could no longer maintain this self-sufficiency. As a result, they turned to the trader, who in most cases was their only contact with the outside. He provided councilling; he referred people with particular concerns to appropriate agencies; he wrote letters and completed forms; and he provided liaison between residents and government agencies. Thus the trader became a powerful influence in the decision-making of the community.

Freighting by York Boat provided an additional source of employment; goods were transported between west Selkirk and Winnipeg down Lake Winnipeg to Warren's Landing by lake freighter. This route was well established, having been in effect since the railroad reached East St. Paul, Minnesota in the late 1850's.

The impact of these initial contacts with the white man's culture was widespread. As shown above, the trader played an important role in community leadership and decision making. In addition, the availability of both money and consumer goods produced various changes in lifestyle. As new tools and implements appeared, many of the traditional techniques were abandoned. European clothing became increasingly common. As time went by, the Indian people acquired an appreciation for purchased foods, cooking utensils, household furniture, etc. In short, spending patterns reflected the advent of the money economy.

Despite such changes, most of the people still earned a livelihood from traditional pursuits. Trappers went as far afield as the barren lands and Southern Indian Lake. The sturgeon fishery on the Nelson provided a summer harvest of a natural resource. Fish was taken over Whiskey Jack Portage and out through Playgreen Lake to Warren's Landing where it was loaded on lake freighters for west Selkirk. Until the 20th century, the Indian and Metis trapped, fished, and tended their gardens, their cultures assimilating as they performed within the economic framework of the small community. "Everybody was working."[1]

Up to this point, the Cree had no written form of communication. This changed when James Evans, a Methodist Minister at Norway House, devised the Cree syllabic alphabet in order to spread the Christian faith among "the heathens." It was coincidentally, an opportunity for the Cree nation to record its history and culture.

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[1] Personal interview with Mr. Charlie Sinclair, a resident of Cross Lake, 1974.

3. 1875 - 1900

A significant milestone in the development of the community occurred in 1875, when Treaty #5 was signed, the Cross Lake Band was officially recorded, and the reserve boundary described. This essentially separated Indian from Metis and placed the Treaty Indian under the paternalistic supervision of the Federal government. The treaty provided for farm land at Fisher River, 160 acres for each family of 5 at Cross Lake, treaty payment, a school on the reserve, and an annual salary to the Chief and his Councillors of $25 per year and downward. The government restricted liquor on the reserve, and maintained the right to administer and sell reserve land. The Indians gave up all rights, titles and privileges to the land in northern Manitoba and Ontario but were allowed to continue to use these lands for hunting and fishing.

As part of the Treaty Agreement, education was the responsibility of the Federal government. However, the Methodist mission schools, which were in existence, continued to meet the needs of the non-treaty residents. In 1886, the Department of Indian Affairs introduced the boarding school to Manitoba. These schools were located off the reserve and Sunday was the only day allowed for parental visit. The curriculum was oriented toward farming, to the exclusion of the trades. This applied to the children attending school at Cross Lake. In 1890 the industrial school was established and operated by missionaries, who provided the religious influence. When introducing the industrial school concept, Sir Hector Langevin explained the government's attitude thus,

> "They (Industrial Schools) have succeeded very well in the United States, and it is quite likely that they will succeed here as well. The fact is, that if you wish to educate these children you must separate them from their parents during the time they are being taught. If you leave them in the family they may know how to read and write, but they will still remain savages, whereas by separating them in the way proposed, they acquire the habits and tastes...of civilized people."[1]

In 1900, residential schools were established. Like the boarding and industrial schools, they were operated under church control and followed the provincial curriculum.

These developments had two disturbing effects:

(a) They created a rift between the Indian and

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[1] House of Commons Debates, May 22, 1883, p. 1376.

Metis groups. The Metis were neither regarded as Indians nor accepted as white. Although the education of Indian children was a matter of concern to the Federal government, the education of non-treaty children was undertaken only on an informal basis by the Church or by individuals. This separation paved the way for the two-entity leadership structure characteristic of the present community.

(b) The educational system disrupted family life. Admittance to the residential school was restricted to children of a particular faith, with the result that many families had mixed religious beliefs. In addition, regular school attendance would make it impossible for native people to trap and fish as a family unit, as they had done in the past. To the people concerned, the need for such measures was far from obvious. Their lifestyle involved trapping in the winter and spring, fishing, gardening and berry picking in summer, gathering firewood in August, and harvesting wild rice in early fall.

> Associated with this lifestyle was a heavy reliance on "country food." Since there was limited use of commercial products, there was little need for cash income. Thus, the formal education required to succeed in a wage economy was of little value to members of this "gathering society."

For these reasons, many families kept their children out of school for extended periods of time.

4. 1900 - 1940

After the turn of the century, the community moved towards modernization at a much slower pace.

The experiences of those who returned from the First World War no doubt had an effect on others in the community The veteran's broader experience, coupled with changes in transportation techniques, prompted people to undertake new economic pursuits. In addition to increased knowledge and activities, there were modifications in the culture and lifestyle of the people. Store purchased clothing was being worn by an ever increasing number of people around 1920. After 1900, the skin tent and birch bark tepee characteristic of earlier times were replaced, first by log houses and eventually by houses built from local lumber sawn at the Church mill. Residents were beginning to use lamps rather than candles. Outboard motors eventually took the place of paddles. In the 1920's, air transportation provided additional employment opportunities in various aspects of resource management, e.g., fire suppression, surveys, water resources, etc. The airplane also provided a link with the outside by making more regular mail service available. This tended to make Cross Lake both a little less remote and a little less self-reliant.

5. 1940 - 1965

In the next decade, rapid changes occurred in all parts of Canada. In particular, government at both the federal and the provincial levels became concerned with the problems associated with northern development.

In 1940, the federal government apparently abandoned its earlier efforts to assimilate the Indian people. The Minister of Interior, J. A. Crerar, stated that the Indian was not "mentally and temperamentally equipped to compete successfully with the white population in the modern struggle for existence. Therefore, the Training Services is not attempting to equip the Indian to work and live in the white urban communities....To a great extent, the Service is attempting to help the Indians make their living on their own reserves."[1]

By 1948, the government again reversed its stand and adopted an official policy of integration.

Thus, there was constant vacillation by the government between integration and segregation in adopting objectives and policies regarding the education of Indian students. During this period, also, provincial government services were being initiated and expanded. In the late 1940's, the Provincial Department of Education was established and a school inspection system inaugurated. In the north, the education of Metis and white children became a provincial responsibility.

As government services expanded, social programs replaced traditional methods of providing mutual support. Many of these helped to alleviate the hardships prevalent in remote northern communities. At the same time, they sometimes imposed changes in lifestyle which were difficult to accept. For example, medical services were provided in an effort to reduce infant mortality and tuberculosis. In time, the community came to depend upon the doctor or nurse for guidance. On the other hand, the need for mothers to bear their children in hospital and for tubercular patients to remain in sanitoriums for extended periods of time caused a painful separation of families. There was also a conflict between the new medical requirements and the traditional medical practices. One old woman was fined $8 for making a home remedy which had been used by her people for years. The activities of the medicine man continued to compete with those of the nurse and doctor for some time. The federal nursing station was built in 1947 but hospital cases continued to be sent to Norway House and Winnipeg.

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[1] The Indian Tribes of Manitoba, Wahbung Our Tomorrows, Manitoba Indian Brotherhood Inc., 1971, p. 115.

The objective of the Church was to tend to all the needs of the people. In fulfilling this objective, Church leaders often adopted the role of teacher, nurse, doctor, radio operator, etc. In addition, the various church denominations competed for converts among the people. Thus, like the government, the Church fulfilled a major social function. It too provided valuable assistance and guidance, but at the same time, imposed demands on the people to change their lifestyle.

Other significant changes which occurred during this period were in communication and transportation. Until 1947, communication with the outside was limited to the Hudson Bay Company and "Forestry" radio. In 1947 the Manitoba Telephone System installed a radio telephone in the new Federal government nursing station. In later years, there were attempts by local residents to operate the radio but the high fee ($25 per month) and calls at all hours of the day and night made the proposition unattractive.

Transportation developed rapidly following World War II. Aircraft provided increasing services. In addition to providing residents with an alternative means of transportation, the reliability of regular air flights allowed for the development of commercial fishing. The expansion and improvement of road transportation also had a significant impact. Horse trails and tractor trails were gradually replaced by a network of winter roads. This, in turn, enabled freight to be moved by large semi-trailer trucks.

In summary, the period was characterized by the increasing influence of external agencies.

The priest, minister, Hudson Bay manager, game officer, nurse and teacher occupied positions of prominence and their counsel concerning welfare, medical matters and business affairs was valued. From the point of view of community decision-making, the people, represented by their Chief and Councillors, were finding it increasingly difficult to keep pace with changing conditions.

From an economic point of view, the improved transportation and communication infrastructure allowed for an expanded economic base and facilitated natural resource development.

6. 1965 - To Present

By the mid 1960's, significant changes had occurred in Indian Affairs policies and Provincial government involvement, e.g., a new housing program for Treaty Indians, and increased benefits for non-treaty natives. The Provincial school system consisted of the Frontier School Division which had funds to improve school buildings and hire more qualified teachers. However, the Frontier school was later closed and non-treaty children now attend the Indian Affairs school.

In the late 1960's, the province passed the Northern Affairs Act which allowed for a provincial Department of Northern Affairs. This department deals with such programs as municipal government, manpower, job training, and transportation (including a runway and road system). The Legislation also paved the way for the first elected Mayor and Council at Cross Lake. The people began to participate in economic and resource development programs funded by the Federal Department of Indian and Northern Affairs.

The demand for power to supply the southern areas of the Province led Manitoba Hydro to embark on an extensive hydro-electric power project at Jenpeg, just west of Cross Lake on the Nelson River. This provided job opportunities and access to a variety of good services hitherto unavailable. At the same time, it has had and will continue to have some negative effects on the lifestyle of the people.

The pattern of family activity so prominent in the early life of the community, has changed dramatically over the past 20 years. The introduction of a formal school system, the expansion of community services, government policies regarding education and social assistance, and, in particular, changing transportation facilities, have tended to keep the families of trappers away from the traplines. In addition, opportunities for employment in construction have prompted younger residents to move away from traditional pursuits. As a result the community has been moving steadily towards modernization.

The expanding community facilities are indications of transition. The community of Cross Lake has recently had three significant additions to its communications network. A local radio station CFNC was introduced in the spring of 1973. Television arrived in the community in late January 1974 and telephones were introduced in February 1974. The majority of homes are now equipped with these conveniences, causing or allowing first hand exposition to national news and national lifestyles, as well as facilitating the dissemination of local news. As an indication of how eagerly awaited these conveniences are "when Cross Lake was connected with the outside world with nearly 300 dial telephones...a total of 10,000 calls had been attempted in its first 12 hours of operation."[1] In addition, the airstrip provides year round contact with other areas of the province by facilitating passenger and freight transport as well as regular mail service (three times per week). The installation of standard electrical service in November, 1972 was also a significant milestone.

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[1] Excerpt from Churchill River Weekly, Vol. 2, No. 3, March 4, 1974.

In addition to the increased economic opportunities and the availability of more consumer goods and services, the change in leadership and decision making is significant. Until 1970 reputational leaders and hereditary Chiefs, were the main decision makers. Since 1970, the non-reserve portion of the community has been governed by an elected Mayor and Council under Manitoba's Northern Affairs Act. This body is a member of the Association of Northern Affairs Community Councils, an umbrella group consisting of representatives of northern community councils. Although the Mayor and Council prepare the budget for activities, the monies are controlled and disbursed by the Department of Northern Affairs.

The Cross Lake Indian Band, which administers the affairs of treaty Indians, is governed by a Chief and Councillors, elected every two years through a poll of Band members. The Band is a member of the Manitoba Indian Brotherhood. The Band Council submits a yearly budget to the Department of Indian and Northern Affairs. Funds for the approved budget are then forwarded to the Band for disbursement. Band functions include planning, programming, budgeting and management of projects such as local housing, as well as the distribution of welfare monies. The elected Chief and Councillors have a significant role in the decision making process. The Department of Indian Affairs supplies technical and advisory services.

The authority previously held by various external agencies has diminished or disappeared. The Hudson Bay Company, the Church, Indian Agent, etc., now perform a subordinate role in the community while the Chief, Mayor and Councillors actively direct community affairs. People of the community now recognize the value of formal education and look to their youth to assume leadership roles. School Committees are determining the curriculum, hiring the teachers and running the educational affairs of the community.

It is apparent that the domination of community affairs by government and other external agencies is no longer acceptable to the people of Cross Lake.

IV. ECONOMIC AND SOCIAL STRUCTURES

Until the 1950's, Cross Lake was a remote community with few ties to the provincial economy and cultures. The main contacts of community members were with residents of other remote communities in the surrounding area. Since all such residents depended for their livelihood upon harvesting the products of forests and rivers, the attitudes, values and activities which evolved were appropriate to the lifestyle of a "gathering society."

In recent years both the methods of earning a livelihood and the attitudes and values of residents have been undergoing a change. The expanding need for power, recreation, etc., has caused industrialized communities to encroach upon the land resources available to remote communities. In addition, younger native residents are reluctant to submit to the long hours and hard work associated with traditional pursuits, so long as alternative employment opportunities are available. As a result, the community of Cross Lake has been moving away from a lifestyle dictated by the requirements of fishing, hunting, and trapping. It is expected that the hydro power project will accelerate the rate of change through its effect on both the physical resource base and the employment opportunities available to local residents.

The following analysis of current economic and social structures provides a baseline against which assessment of the impact of the project on the community of Cross Lake can be made.

A. THE ECONOMY

In 1972/73, the community income of Cross Lake was $2,160,000, while average income per person in the labour force was $3,942.[1] Tables 1 and 2 present community income in two different but related ways -- by type of economy and by economic activity. Three types of economies are identified -- the traditional economy, the wage economy, and the transfer payment economy. Economic activities include fishing, trapping, hunting, the resource development sector, service industries, and the government sector. The three sub-economies and related activities are discussed in detail in Parts 1 to 4 below.

The economic activity of fishing provided $175,000 or

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[1] This excludes income to transient residents such as teachers, nurses, etc.

Table 1

ESTIMATED INCOMES DERIVED FROM ALL SOURCES: CROSS LAKE, 1972/73*

	Traditional Economy				
Income Source	Cash	Income In Kind	Wage Economy	Transfer Payment Economy	Total
Fishing	44,000	131,000	-	-	175,000
Trapping	19,000	23,000	-	-	42,000
Hunting	-	100,000	-	-	100,000
Resource Development	-	-	650,000	-	650,000
a) Forestry	-	-	16,000	-	-
b) Hydro Development	-	-	634,000	-	-
Government	-	-	396,000	667,000	1,063,000
Service Industries	-	-	164,000	-	164,000
TOTAL	$63,000	$254,000	$1,210,000	$667,000	$2,194,000

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[*] For sources see detailed tables concerning each income source.

Table 2

PERCENTAGE OF INCOMES DERIVED FROM ALL SOURCES: CROSS LAKE, 1972/73*

	Traditional Economy				
Income Source	Cash	Income In Kind	Wage Economy	Transfer Payment Economy	Total
Fishing	2%	6%	-	-	8%
Trapping	1%	1%	-	-	2%
Hunting	-	5%	-	-	5%
Resource Development	-	-	30%	-	30%
a) Forestry	-	-	1%	-	-
b) Hydro Development	-	-	29%	-	-
Government	-	-	18%	30%	48%
Service Industries	-	-	7%	-	7%
TOTAL	3%	12%	55%	30%	100%

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*For sources see detailed tables concerning each economic activity.

8% of community income, trapping $42,000 or 2%, hunting $100,000 or 5%, resource development $650,000 or 30%, government $1,063,000 or 48% and service industries $164,000 or 7%. Government activities are subdivided into wages - $396,000 or 18% and transfer payments of $667,000 or 30%. It should be noted that, in the resource development sector, wages generated as a result of Manitoba Hydro's development were approximately $634,000 or 29% of total community income.

When community income is considered from the point of view of types of economies, the traditional economy accounts for $317,000 or only 15% of total community income, while the wage economy generates $1,210,000 or 55% and the transfer payment economy $667,000 or 30%. This indicates that from an economic viewpoint Cross Lake is a community that is approaching full integration with the larger provincial economy. This fact may be surprising to residents and outside agencies who, tend to place a heavy emphasis on the importance of the traditional sector. This evidence of a marked trend towards modernization must be given consideration in any future development plans.

The impact of this development on Cross Lake must be viewed from two different time perspectives. In the short term, i.e., during the construction period, the development has had a major positive impact on the levels of income and employment in the community. Tables 1 and 2 and the more detailed discussion under the section on " The Wage Economy" describes the nature and magnitude of this impact. In addition, external transportation has been improved by the provision of an access road to the Jenpeg construction site. This has brought an all weather road link to within 25 miles of the community. In the longer term, i.e., after the construction period, the impact on the community will likely be negative. Ongoing income losses are expected to accrue to trapping and, possibly, fishing activities. There will be real property damage in the community and there is a possibility, as yet undefined, of disruption of both internal and external transportation. Perhaps the most critical effect will occur in the employment sector. If new programs are not generated to ensure more employment in this area, then there will be a dramatic drop in employment levels within the next two years with all its associated socio-economic problems.

1. The Labour Force

The population of Cross Lake is approximately 2,000. The age distribution of this population consists of 1,060 people under the age of 16, 870 between 16 and 65 and 79 persons over 65 years. Labour force was estimated from these figures to be approximately 548.[1] Table 3 below, provides a breakdown of the labour force by age and sex.

Table 3

LABOUR FORCE - CROSS LAKE, 1972*

Age Group	Male	Female	Total
16 - 20	61	27	88
20 - 40	250	60	310
40 - 65	140	10	150
TOTAL	451	97	548

*Source: Canada, Department of Indian and Northern Affairs. Manitoba, Department of Northern Affairs.

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[1] Labour force was defined as all persons between the age of 16 and 65 who were not attending school full time. Further, married women, unwed mothers and separated women with children were not included.

Approximately 5% of the labour force are qualified tradesmen, professionals or have management experience. Semi-skilled persons, mostly in construction trades, account for a further 22%, while 55% are classified as unskilled. In addition, 18% have been classified as fishermen or trappers with no other occupation. (See Table 4 below.)

Table 4

SKILLS INVENTORY - CROSS LAKE, 1972

Category	Number of Persons	Percent
Skilled	28	5
Semi-Skilled	120	22
Unskilled	300	55
Fishermen & Trappers	100	18
TOTAL	548	100

*Source: Canada, Department of Indian and Northern Affairs. Manitoba, Department of Northern Affairs, Northern Manpower Corps.

Education levels at Cross Lake are lower than the provincial average. Those under 30 years of age and no longer attending school have an average level of formal education of grade 7 or 8. Persons between 30 and 45 average approximately grade 6, while those over 40 have lower levels of formal education.[1] It should be noted that within the context of the local economy and the perceived needs of this community, the validity of this type of education can be questioned. In addition, high school upgrading courses and vocational training courses are offered on an ongoing basis by both federal and provincial agencies.

The mobility of this labour force is difficult to determine. One factor which impedes the incentive to leave the community to take either temporary or permanent employment elsewhere is language. Approximately 25 members of the labour force over 40 years old do not speak English and, therefore, are unsuitable for employment outside the reserve.[2] However, more formal education has eliminated this constraint among younger age groups. Further constraints to mobility exist in the strong family ties which are evident in Cross Lake as well as the normally acknowledged constraints of low education levels and low levels of job skills in the context of the wider wage economy. In addition, Cross Lake has a specific problem of actual transportation facilities in and out of the community which impedes mobility, particularly in the case of temporary and commuting types of employment. There is no all-weather road link to Cross Lake and, hence, it becomes more costly and less convenient for residents to leave the community to find employment.

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[1] Information was derived from the Manitoba Department of Northern Affairs and the Canada, Department of Indian and Northern Affairs.

[2] Information derived from Manitoba Human Resources Survey, Department of Indian and Northern Affairs, 1972.

Attitudes to work in general and to leaving the community to find employment in particular are major factors in discussing this issue. An attempt was made to establish these attitudes through an examination of the past work history of the community and through a series of interviews with local residents. Examination of historic employment data for this community indicates that there has been a relatively strong tendency to enter the wage economy and to leave the community temporarily to find employment.[1] This tendency has been most recently demonstrated by the number of Cross Lake residents employed at Jenpeg and the surrounding construction camps during the past twelve to eighteen months. Figures indicate that an average of 100 local residents per month have worked for Manitoba Hydro or various contractors connected with the Outlet Lakes development.[2] The degree to which this figure indicates attitudes toward mobility is obscured by the fact that a highly effective local employment service has been operated by Manitoba Northern Manpower Corps since the fall of 1973.

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[1] Information was derived from a number of sources, the most important of which were Manitoba, Department of Northern Affairs and Mines, Resources & Environmental Management and Canada, Department of Indian and Northern Affairs.

[2] Northern Manpower Corps, Manitoba Department of Northern Affairs.

A second source of information relating to attitudes toward mobility is interviews conducted by members of the Social and Economic Impact Study Team. Responses indicate that there is an awareness that jobs are scarce in Cross Lake and that more opportunities exist outside the community. The two discernible motivating factors involved in this issue appeared to be the promise of better, more permanent employment and the wider variety of future opportunities which may be available to the children. Approximately 60% of respondents indicated that they would be willing to move to better employment. This willingness was usually conditioned by one or two of the following constraints:

1. that there be a reasonable expectation of undertaking permanent employment, and

2. that their families could relocate with them.

The willingness to relocate appeared to be stronger among the younger age groups.

In summary, Cross Lake possesses a relatively large labour force in comparison with other remote northern communities. The level of formal education and technical training is low compared to southern standards but there appears to be a willingness to enter the wage economy even if this requires moving out of the community for extended periods of time.

2. The Traditional Economy

a) Trapping

i) Background

Historically, trapping has been a major source of income to the community of Cross Lake. This pattern of activity has changed dramatically over the last twenty years. The introduction of skidoos and aircraft have provided faster and easier access to traplines. These, as well as other previously mentioned changes, have resulted in the trapper going out on his line without his family and for shorter periods of time. Recent data indicates that the average trapper is now spending approximately six to eight weeks a year on the trapline as opposed to fifteen to seventeen weeks a year in the past.

The above shift in trapping patterns has implications regarding the role of trapping in the local economy. The number of persons engaged in this activity has declined by approximately

50% over the last twenty years.[1] It is also significant to note that the average age of trappers has increased over this time period to the point where approximately 70% of those persons engaged in commercial trapping during the 1972/73 season were over the age of 40.[2] Further, total trapping income has declined despite a significant rise in fur prices since the 1970/71 season.

Changes have also occurred in the level of "income-in-kind," i.e., food and other products obtained from the land without any cash transaction taking place. Past records show a substantial amount of food being taken in the process of trapping. The trend appears to be downward as the level of cash income and the availability of store goods increases.

Aside from the above considerations, some discussion of historical production levels may provide an indication of the productive potential in the area. These levels may serve as a proxy measure of potential biological production levels, which are not available. Examination of production data since the 1945/46 season reveals that the best overall years for trapping production occurred during the early 1950's, with a second peak in the late 1960's. Six year average peak production by the four major species trapped were as follows:[1]

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[1] Figures quoted are summarized from Manitoba Mines, Resources and Environmental Management trapper data and native people demographic data received from the Federal Department of Indian and Northern Affairs.

[2] Annual reports, Game Branch, Manitoba Department of Mines, Resources and Environmental Management, 1949/50 to 1961/62.

Table 5

HISTORIC PEAK PRODUCTION LEVELS

Specie	Production	Years
Beaver	1,467	1950/51 to 1955/56
Mink	1,007	1957/68 to 1961/62
Lynx	228	1967/68 to 1972/73
Muskrat	26,914	1946/47 to 1951/52

In summary, the trends indicate that trapping activity is declining from the point of view of total income generated and employment levels. Further, the same trend is apparent with "income-in-kind" generated from trapping. The trends discussed above are based upon interpretation of incomplete and erratic data and personal communications with a number of people. Therefore, a high degree of accuracy should not be assumed. Nevertheless, the discussion is defensible and the information adequate for the purpose of assessing the economic impact of Manitoba Hydro's Lake Winnipeg Regulation Project on Cross Lake trappers. The basic conclusion to be drawn is that the Cross Lake trapping industry could be best characterized as an old, declining industry.

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[1] Data was derived from Manitoba Mines, Resources & Environmental Management files.

ii) The Present

Trapping presently represents approximately 2% of the community's annual income. From 1967/68 to 1972/73, the average total value of fur sold annually was $46,400 and the net income to trappers was $18,600. The average number of trappers involved in the industry was 131. Table 6 on the following page details these findings.

The net value or net income to Cross Lake trappers is about 40% of total value. The remaining 60% of total value can be charged against royalty charges, auction fees, shipping, handling and marketing costs and trapper production costs.

Production varies substantially from year to year but on average the most important specie trapped is beaver with mink, lynx, and muskrat following in decreasing order of importance.

Table 6

VALUE OF FUR HARVEST & NUMBER OF TRAPPERS CROSS LAKE, 1967/68 TO 1972/73

Year	Total Value* $	Net Value** $	Number of Trappers
1972/73	26,400	10,600	120
1971/72	41,200	16,500	129
1970/71	29,900	11,900	122
1969/70	56,300	22,500	148
1968/69	81,300	32,500	199
1967/68	43,300	17,300	189
AVERAGE VALUES	$46,400	$18,600	131

Source: Manitoba, Department of Mines, Resources and Environmental Management.

*Total values are market value f.o.b. Winnipeg obtained from Manitoba Mines, Resources & Environmental Management records.

**Net income to the trapper after production and marketing costs.

Table 7

VALUE OF FUR HARVEST BY SPECIE
CROSS LAKE 1967/68 TO 1972/73

Year	$ Beaver	$ Muskrat	$ Mink	$ Lynx	$ Other	$ Total Value	$ Net Income
1967/68	16,488.00	5,754.00	18,528.00	326.00	2,154.00	43,250.00	17,300.00
% of Total	38%	13%	43%	1%	5%		
1968/69	23,034.00	5,735.00	39,984.00	9,453.00	7,138.00	81,344.00	32,500.00
% of Total	28%	7%	49%	7%	9%		
1969/70	20,881.00	3,445.00	12,649.00	13,710.00	5,617.00	56,302.00	22,500.00
% of Total	37%	7%	22%	24%	10%		
1970/71	9,510.00	10,616.00	828.00	6,047.00	2,875.00	29,876.00	11,900.00
% of Total	32%	36%	2%	20%	10%		
1971/72	14,307.00	4,371.00	4,617.00	12,579.00	5,302.00	41,164.00	16,500.00
% of Total	35%	10%	11%	31%	13%		
1972/73	9,283.00	1,679.00	6,552.00	2,073.00	6,791.00	26,378.00	10,600.00
% of Total	35%	6%	25%	8%	26%		
AVERAGE	15,584.00	5,267.00	13,859.00	6,698.00	4,979.00	46,385.00	18,550.00
% OF TOTAL	34%	11%	30%	14%	11%		

SOURCE: Manitoba Department of Mines, Resources and Environmental Management

Table 7 details the value of the fur harvest by specie. Beaver accounts for approximately one-third of the total harvest value. This specie and muskrat are water based and will be directly affected by the change in the Cross Lake water regime. Also mink extensively feed on muskrat.

The relationship between recent fur production and "potential" fur production has been defined. Table 8 compares average total value of fur harvested since 1967/68 to the potential average value assuming that the average peak production figures shown in Table 5 are valid and that average prices are constant.

Table 8

AVERAGE TOTAL VALUE OF FUR HARVEST BY MAJOR SPECIE ACTUAL & POTENTIAL - 1967/68 to 1972/73 - CROSS LAKE

Specie	Average Total Value Potential	Average Total Value Actual	% Actual of Potential
Beaver	$ 27,374	$15,403	56%
Muskrat	49,540	5,169	10%
Mink	16,897	12,926	76%
Lynx	10,485	7,972	76%
TOTAL	$104,296	$41,470	40%

These figures indicate that recent trapping production is approximately 40% of what the historic potential suggests it could be. However, if muskrats are excluded from the calculation on the grounds that low prices relative to other species have gradually resulted in decreasing harvests, the result is that Cross Lake is trapping at about 66% of its historic potential. It is true that these figures do not reflect the biological potential of the area. However, they are relevant from an economic viewpoint, since they introduce the constraints of fur prices and production costs into the analysis of fur potential. This approach appears to be advantageous in the light of the question at hand; that is, what will be the economic impact on trapping in the Cross Lake area as a result of the Lake Winnipeg Regulation Project.

iii) Impact

Earlier, changes in the water regime of Cross Lake and adjacent waterbodies were discussed in detail. The implications of these changes for trapping in this area are significant. Two factors should be noted:

1. Water levels under regulation will generally

be the reverse of the situation without regulation. The rise in levels in the fall is the most significant change in this respect.

2. The cutback during freeze-up will have a significant impact.

The sudden fluctuation in levels by from two to four feet will cause major disruptions among beaver and muskrat populations and to a certain degree effect the mink population. Further, the cutback will occur annually, therefore, it will not be possible for these specie to re-establish themselves on a permanent basis after a period of adjustment to the new regime. This last statement is, perhaps, the most relevant since it implies that losses to trapping in this area will be ongoing until such time as Cross Lake water level fluctuations are moderated through regulation of its outflow.[1]

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[1] Manitoba Hydro's present plans state that a control structure and generating station is scheduled to be developed at Bladder Rapids in approximately 20 years. Therefore, it appears that this regime will prevail for at least this time period. It should be noted that alternative developments at Whitemud Falls and Redrock Rapids are also being considered. See Figure 1 for locations.

There are twenty-five Cross Lake registered traplines located in the area to be effected. (See Figure 4.) Table 9 outlines the value of the fur harvest and number of trappers utilizing these areas.

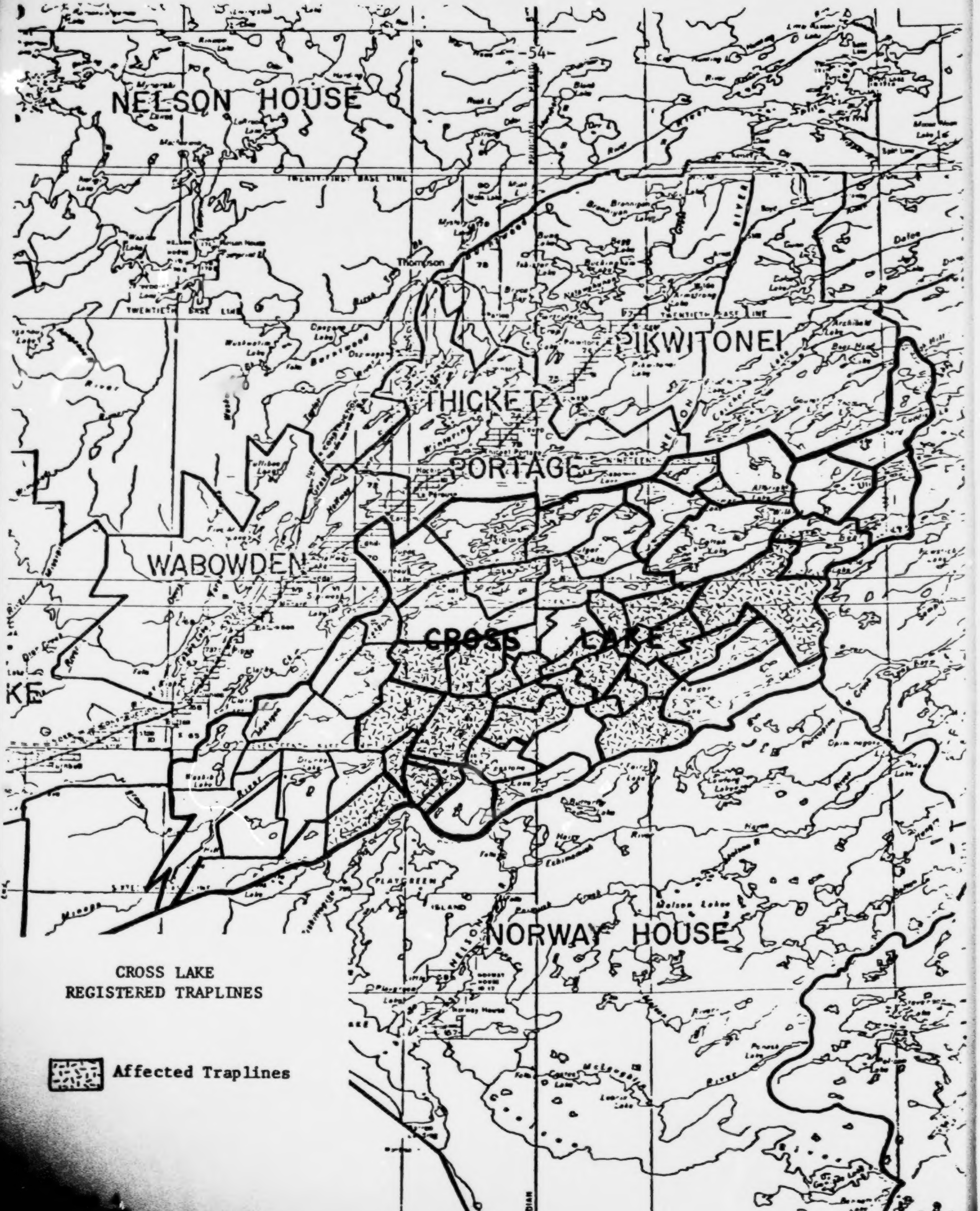
Table 9

VALUE OF FUR HARVEST & NUMBER OF TRAPPERS: FOR AFFECTED AREA - CROSS LAKE, 1967/68 TO 1972/73

Year	Total Value ($)	Number of Trappers	Net Income
1967/68	$11,468	58	$4,587
1968/69	14,381	73	5,752
1969/70	11,097	61	4,439
1970/71	14,783	100	5,913
1971/72	28,142	102	11,257
1972/73	5,645	86	2,258
AVERAGE	$14,252	80	$5,701

*Source: Manitoba Department of Mines, Resources & Environmental Management.

These figures represent approximately one-third of the value of the fur harvest since 1967/68 and about 50% of Cross


NELSON HOUSE
-54-
TWENTY-FIRST BASE LINE
Thompson
TWENTIETH BASE LINE
PIKWITONEI
THICKET
PORTAGE
WABOWDEN
CROSS LAKE
KE
PLAYGREEN
NORWAY HOUSE
Nelson River

CROSS LAKE
REGISTERED TRAPLINES

▨ Affected Traplines

Lake trappers have regularly utilized these traplines. The community trapline (RTL #56 on Figure 4) is included in this area. In this case, the use of income to indicate magnitude of impact is less applicable. This line is generally used as a training ground for young people and an area where older residents can continue to trap as a recreational activity. Hence, the impact to this area must be assessed within the context of a disruption of a traditional lifestyle for the older residents and the loss of trapper training opportunities for young residents.

In its report on the wildlife resources of the Outlet Lakes area, F. F. Slaney & Company Ltd. indicates that there will be substantial reductions in the availability of beaver, muskrat and mink in the areas affected.[1] Beaver and muskrat have accounted for approximately 45% of the value of production in this area, with mink accounting for another 30%. It is felt that there will be some re-establishment of beaver and muskrat after the initial disruption. However, due to the periodic nature of the cutback, production will be well below current levels. Mink will be less affected but there will be some long-term reductions because of the decrease in one of its main food sources, muskrat. On the basis of this and other information, the following impacts can be postulated.[1] Beaver and muskrat production will be reduced by an average of 50% of the affected area's average historic potential production. It can be expected that production levels will vary substantially in the short run, particularly since the cutback occurs annually. Mink production will be reduced by an average of 25% of the affected area's average historic potential production. Again, substantial variations in production can be expected in this case.

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[1] F. F. Slaney & Company Ltd., Wildlife Resource Impact Assessment, Outlet Lakes Area, March 1973. For the Canada/Manitoba Lake Winnipeg, Churchill and Nelson Rivers Study Board.

Projection of these production figures into value of harvest and net income to trappers data yields the following results as shown in Table 10.

It should be noted that the above estimates are conservative since they do not consider future increases in prices. Personal communications with officers of the Department of Indian and Northern Affairs and the Hudson Bay Company indicated

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[1] Personal communications with field officers of the Manitoba Department of Mines, Resources and Environmental Management and Cross Lake trappers.

Table 10

AVERAGE ANNUAL IMPACT ON POTENTIAL VALUE OF FUR HARVEST AND NET INCOME AFFECTED AREA - CROSS LAKE*

Specie	Historic Potential Production (Pelts)	Production Impact (Pelts)	Total Value*	Net Income*
Beaver	279	-140	$ -2,612	$-1,045
Muskrat	16,423	-8,212	-15,110	-6,044
Mink	171	-43	-722	-289
Lynx	43	Negligible	Negligible	Negligible
TOTAL			-$18,444	-$7,378

*Dollar values were derived using average fur prices (f.o.b. Winnipeg) by specie for the period 1967/68 to 1972/73. Negative sign (-) indicates a reduction in total value and net income due to changes in water regime.

that fur prices can be expected to remain relatively high and become more stable in the future. However, for the purpose of specifying the relative magnitude of trapping impact, these estimates are adequate. Comparison of these figures with those given in Table 6 shows that a decrease of about 17% of potential value and potential net income can be expected. If muskrat are excluded from the analysis on the grounds that they are, at best, a marginal commercial specie, then the reduction will be about 6%. However, actual production of the three remaining major specie has averaged approximately 66% of potential. Therefore, at the least, actual losses to trapper income can be expected to be minimal. However, this situation can result only if trapper efforts increase substantially to ensure that actual production approaches the new post-regulation potential fur production levels. In the light of the discussion in the section entitled "Background," a more realistic assumption would be that trapper effort will remain essentially the same. Further, access to the affected areas could be partially disrupted due to poor ice conditions on Cross Lake caused by the operation of the Jenpeg control structure. Therefore, trapper productivity could be reduced to a level below that which has existed recently. In this case, it can be expected that actual fur harvest values and trapper net incomes will fall by at least 15% to 20% in the Cross Lake Registered Trapline section.

The impact on income-in-kind can be expected to be at least as much as the decrease in the net cash income derived from trapping. This would result in a further annual loss of approximately $4,600 in community income.

iv) Mitigation

The above analysis indicates that there will probably be substantial negative impacts to trapping in the Cross Lake area from the viewpoint of both potential and actual production. The following mitigation measures are recommended for the purpose of alleviating, at least in part, these effects.

Recommendations

a) THAT trapper real property losses (traps, cabins, etc.) be replaced or equivalent cash payments made.

b) THAT provision be made for equivalent alternatives and/or compensation to affected trappers for loss of income.

A number of alternatives are available as follows:

-Relocation of trappers to presently underutilized Registered Traplines with accompanying subsidization during a period of adjustment, perhaps three to five years. It is stressed that this alternative should be made available only to those affected trappers who voluntarily choose to relocate.

- Provision of financial support by Manitoba Hydro to the Manitoba Department of Mines, Resources & Environmental Management Fur Program. A cost-sharing agreement between Manitoba Hydro, Mines, Resources & Environmental Management and local representatives could be negotiated to allow for increased trapper education and hence production to offset losses resulting from the Lake Winnipeg Regulation Project. (See Appendix 1)

- The provision by Manitoba Hydro of alternative recreational facilities to offset losses on the community trapline. The nature of these facilities could be determined through negotiations between community representatives and Manitoba Hydro.

- Provision of financial support and direct support by Manitoba Hydro to job training programs. A cost-sharing agreement between Manitoba Hydro and appropriate Federal and/or Provincial authorities could provide alternative job training programs to those local residents who cannot enter the trapping occupation because of the reduction in potential fur production. This program could be orientated to younger residents who, under normal circumstances, would have become trappers but have lost this option because of reductions in furbearer habitat in the Cross Lake Registered Trapline section.

b) Fishing

The Cross Lake commercial fishery has been in existence since about 1942. In its early years, Walker, Duck and Sipiwesk Lakes were fished along with parts of the Nelson River. Cross Lake was not a commercially fished area until fairly recently (1959). Prior to this, the lake was fished exclusively for domestic purposes. Past records show that between 200,000 and 300,000 pounds were harvested annually with about half being allocated to human consumption and half being used for dog food.[1] Prior to the establishing of the Freshwater Fish Marketing Corporation (F.F.M.C.) in 1969, Cross Lake commercial fishermen either operated independently and sold their catch to private fish companies, or worked for outside fishermen who, in turn, dealt with the fish companies. Since 1969, only Cross Lake residents have fished the lake and the fishermen are presently organized into the Cross Lake Fishermen's Co-operative which deals with the F.F.M.C. sub-agent in Wabowden.[2] Over the last twenty years, commercial fishing in Cross Lake has declined in terms of the number of fishermen engaged in this activity but the level of production has remained about the same. Incomes have fluctuated dramatically over this period. However, increased fish prices and further rationalization of production methods have resulted in relatively higher incomes in the last few years.

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[1] Annual Reports, Game Branch, Manitoba Department of Mines, Resources & Environmental Management, 1949/50 to 1961/62.

[2] A detailed discussion of the organization and pricing policies of the F.F.M.C. and how they relate to the Cross Lake fishery is contained in a report entitled, Fisheries Limnology, Outlet Lakes Area, March, 1973 prepared for the Lake Winnipeg, Churchill and Nelson Rivers Study Board, Winnipeg, Manitoba.

The fishery provides 8% of the total community income when income-in-kind is added to profits and wages. It ranks third as a source of income to the community.

In 1973, the fishery provided approximately $43,900 in net income to 21 fishing operators. In addition, the fishery provided $131,000 in income-in-kind from the use of fish for domestic purposes. A very small amount of cash income was also derived from the sale of fish to local residents. A summary of community income from commercial fishing is given in Table 11. (For a detailed breakdown of the community income from fishing in the years 1969 to 1973, see Appendix 2.)

There is a reasonable probability that, with the advent of the Co-op in late 1973, more employment and income will be generated in the future. Plans are underway for improved packing and local shipping facilities. Also, it is expected that the Co-op will employ a total of six local residents in the near future.[1]

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[1] News Release, "11 New Co-operatives Incorporated This Year," Information Services Branch, Manitoba Government, September 28, 1973.

Table 11

COMMUNITY INCOME FROM COMMERCIAL FISHING & NUMBER OF FISHERMEN - CROSS LAKE, 1969 - 197 *

Year	Net Income To Fishermen	Number of Fishermen
1969	$43,900	21
1970	13,400	12
1971	33,400	16
1972	45,500	22
1973	14,900	23
AVERAGE	$30,200	19

*Source: Freshwater Fish Marketing Corporation and Manitoba Department of Mines, Resources & Environmental Management files.

i) Impact

The negative impact of changes in water regime on productivity is not expected to be substantial.[1] Productivity of most major species (whitefish, walleye, pike and goldeye) is expected to be increased by higher winter levels and decreased by lower summer levels. On balance, the impact is expected to be relatively minor. The sturgeon fishery may experience some disruption, but past experience at earlier hydroelectric projects (e.g. Winnipeg River Development) have indicated that the specie may re-establish in the Jenpeg tailrace. Some concern has been raised in relation to the spawning activities of whitefish. The reduction in water levels caused by the cutback could adversely affect incubation of whitefish eggs in the Cross Lake area. No detailed study has been undertaken on this question. Therefore, little more can be added to this issue at this time. In general, studies completed to date indicate that the Lake Winnipeg Regulation project will have no substantial impacts, either positive or negative, on fish productivity in Cross Lake or the adjoining water bodies. It should be noted that this statement must be read within the context of a lack of information concerning the impact of water level fluctuations on whitefish spawning.

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[1] A more detailed discussion of fisheries limnology impacts in the Cross Lake area is contained in the Fisheries Limnology, Outlet Lakes Area, March, 1973 prepared for the Lake Winnipeg, Churchill and Nelson Rivers Study Board, Winnipeg, Manitoba.

Nevertheless, the impacts on commercial fishing are expected to be more significant. Short term disruptions in production can be expected due to possible changes in fish migration patterns and fish productivity. These variations are not expected to be substantial. However, access to the resource and transportation pattern changes will probably have significant effects. The lower water levels in summer will result in more difficult navigation on Cross Lake. Further reduced levels may impede the movement of fishermen from Walker Lake to Cross Lake. The winter fishery may be disrupted due to possible poor ice conditions resulting from anticipated increases in water level fluctuations and the effects of the cutback. If poor ice does disrupt this fishery, the losses to winter fishermen can be expected to be significant. However, this fishery accounts for only about 5% of the average annual net income to fishermen and, therefore, the impact on community income is not expected to be serious. On the positive side, the major factor is the possible exploitation of the Jenpeg access road with its ensuing reduction in transportation costs. At present, the commercial harvest is flown from Cross Lake to Wabowden, where it is transhipped to rail cars or refrigerated trucks for furtherance to Winnipeg. The cost of air freighting has been estimated to be approximately 5.7¢/pound (Cross Lake to Wabowden) and 6.3¢/pound (Walker Lake to Wabowden).[1] The installation of a holding station at the mouth of the Minago River in combination with regular, scheduled truck pick-ups from the new packing station in

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[1] _Ibid._, Table 21, page 85.

Wabowden could result in a reduction in transporation costs by at least 50%. Assuming that these savings will, in large part, accrue to local fishermen an average increase of $300 to $400 in annual net income per fishermen could be expected.[1]

In summary, the negative economic impact to the Cross Lake fishery is not expected to be substantial. There may be a slight drop in production during the years 1979 and 1980 due to disruptions in the spawning patterns of fish after Jenpeg becomes operational in November of this year. However, this loss can be expected to be more than offset by the savings to be gained through rationalization of the transportation aspects of the local fishery. These savings, if coupled with expected price rises and the possibility of an increased quota on Cross Lake, lead to the conclusion that the future prospects of the Cross Lake fishery appears to be reasonably good. Nevertheless, mitigation measures to offset the effects of the hydro development may still be necessary.

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[1] Past production records indicate that the Cross Lake fishery's harvests have been at or near lake quotas in almost all years. Assuming these production levels will be maintained in the future and that transportation costs are reduced from approximately 5.7¢/lb. to 2 to 2.5¢/lb., then the average savings per fishermen can be expected to be between $300 and $400 annually.

ii) Mitigation

Although, in general, the Cross Lake commercial fishery may not be subjected to any major negative impacts, there remains a number of specific measures that could be taken to alleviate possible problems or exploit new opportunities arising from the Lake Winnipeg Regulation project.

Recommendations

1. THAT fishermen's real property losses (boats, nets) resulting from excessive low or high waters or abrupt fluctuations in water levels due to Jenpeg control be replaced or equivalent cash payment made.

2. THAT there be an early initiation of construction of control structures at the outlet of Cross Lake with a view to mitigating the anticipated increases in water level fluctuations and reversal of the natural water regime.[1]

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[1] Fisheries Limnology, Outlet Lakes Area, March, 1973, p. 125.

3. THAT the provision of a portable fish holding station at the mouth of the Minago River to exploit opportunities for transportation cost savings resulting from the Jenpeg access road be undertaken as soon as possible.

4. THAT monitoring the outlet of Walker Lake to determine the extent of [illegible]ruption to transportation between [illegible] and Cross Lake be initiated. If necessary, channel improvements to ensure water access to the lake could be undertaken.

5. THAT compensation for income losses resulting from possible disruption of the fishery be made available to affected fishermen.

c) Hunting

Hunting in Cross Lake continues to provide a substantial amount of income-in-kind. It is estimated that this activity provides 5% of total community income. The two major sources of food are moose and waterfowl. Table 12 summarizes, by season, estimates of the value of this activity to the community. (See Appendix 3, for a discussion of the methodology employed in deriving these estimates.)

Table 12

ESTIMATED INCOME-IN-KIND DERIVED FROM LAND FOOD, BY SEASON - CROSS LAKE*

Specie	Winter	Spring	Summer	Fall	Total
Moose	$16,000	$ 2,000	$ 3,000	$30,000	$ 51,000
Fish	37,000	29,000	27,000	38,000	131,000
Waterfowl	-	26,000	700	23,000	49,000
Other Trapped Animals	300	17,000	-	5,000	23,000
TOTAL	$53,000	$73,000	$30,700	$97,000	$254,000

*Source: Interviews with local residents and numerous personal communications with government field staff. Manitoba Bureau of Statistics, Manitoba Price Statistics, January, 1974, Hudson Bay Company Ltd.

Currently, hunting accounts for approximately 39% of the total value of land food.

After regulation, there may be minor disruption of the moose population due to increased water level fluctuations and disruption of habitat. No adverse impacts are expected to accrue to waterfowl in the area.[1] However, a more significant effect on wildlife populations may arise from increased hunting pressure as a result of large inflows of outside construction workers to the area. There is some indication that this has, in fact, happened and that it has necessitated a more stringent application of game regulations.[2]

Recommendation

THAT existing game regulations continue to be strictly enforced in the Outlet Lakes area.

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[1] F. F. Slaney & Co., Wildlife Resource Impact Assessment, Outlet Lakes Area, March 1973. Lake Winnipeg, Churchill and Nelson Rivers Study Board.

[2] Personal communications with Manitoba Mines, Resources and Environmental Management field staff.

3. The Wage Economy

The wage earning sector of the Cross Lake economy centers around the provision of local community services and employment generated by resource development in the vicinity of the community. Table 13 summarizes community income generated from wage employment in 1972/73. It is apparent that income derived from construction work related to Manitoba Hydro's development has had a substantial positive impact on community impact. Government employment is the second largest component of the wage economy, while private services rank third.

The development of the hydroelectric potential of the Outlet Lakes area has resulted in large increases on wage employment in Cross Lake. Table 13 indicates that approximately 54% of wage income to Cross Lake originated from employment connected with the hydro development. This is significant since there have been and continue to be very few other wage employment opportunities in and around the community. In addition, employment associated with the hydro project has provided an opportunity for large numbers of Cross Lake residents

Table 13

ESTIMATED COMMUNITY INCOME FROM THE WAGE ECONOMY BY SECTOR - CROSS LAKE, 1972/73*

Sector	Income ($)	Number Employed	% of Income	
Resource Development:				
i) Hydro Development	634,000	100	97%	
ii) Forestry	16,000	8	3%	
Sub-Total	650,000	108		53%
Government:				
i) Education & Medical	172,000	24	43%	
ii) Community Infrastructure	165,000	50	42%	
iii) Other	59,000	7 full time 20-25 part time	13%	
Sub-Total	396,000	101-106		33%
Service:				
i) Transportation	41,000	15	25%	
ii) Retailing	71,000	16	43%	
iii) Other	52,000	7	32%	
Sub-Total	164,000	38		14%
TOTAL	$1,210,000	247-252		

*Source: Manitoba Departments of Northern Affairs, and Resources and Environmental Management. Canada, Department of Secretary of State and Northern Affairs.

to gain experience in heavy construction work. Unfortunately, the training value of this opportunity has not been fully exploited. Most local residents have been employed as unskilled labour with a small number receiving semi-skilled or skilled positions. There does not appear to have been any significant change in this pattern since the initiation of construction in 1972.

The high level of employment generated by the power development in Cross Lake relative to other northern communities analyzed in this study can, in part, be attributed to a highly effective local employment service provided by Manitoba Northern Manpower Corps. This service has enabled the timely distribution of job vacancy information to the community and provided a rapid, uncomplicated system through which local residents may apply for employment at Jenpeg or one of the other surrounding construction sites. The procedures used by the Northern Manpower Corps at Cross Lake could provide a basis for improving service in other remote northern communities.

Future employment opportunities in this area are difficult to define with any degree of accuracy. The present employment generated by the power project will decrease rapidly until 1976. After 1976, approximately six or seven permanent skilled positions will be available at Jenpeg with some seasonal reservoir management job opportunities occurring periodically. This rapid decline in jobs, when coupled with an increase in the local labour force by approximately 250 to 300 persons in the next five years,[1] indicates the pressing need for the development of a local employment strategy.

It is not the objective of this study to provide a detailed local employment strategy. However, some suggested basic principles and areas where future job creation opportunities appear to be promising may be a useful starting point. The previous discussion makes it evident that in the past, the resource base of Cross Lake could not support a high level of employment in the community. As a result, residents began leaving the community to find employment, usually of a temporary nature. This trend is likely to continue in the future. Hence, a basic principle of any local employment strategy could be to continue to encourage mobility out of the community. As mentioned previously, the provision of an all-weather road link could facilitate this process. Opportunities exist for future employment in forestry operations in the Sipiwesk Lake area and in tourism throughout the area.[1] Within the community itself, there appears to be opportunities in the service sector and, to a lesser extent, the resource sector. It is expected that the level of services available to Cross Lake will increase and, therefore, jobs associated with operation and maintenance will likely become available. There appears to be potential for a small modern sawmill operation to serve the local market and replace the outmoded facility which is presently in use. Further, the provision of fresh produce locally has potential employment opportunities.

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[1] Derived from demographic data provided by Manitoba, Department of Northern Affairs and Canada, Department of Indian & Northern Affairs.

In summary, there are two areas of development to consider in devising an employment strategy for Cross Lake. First, programs to ensure local participation in resource development in the vicinity of the community will be essential, and second, local job opportunities, primarily in the service sector, must be exploited.

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[1] The Sipiwesk Lake area will provide approximately one-third of Manitoba Forest Resource's total production in the future. Tourism development potential exists in the Minago River area and the Walker Lake area.

Recommendations

As a result of Manitoba Hydro's development in the Outlet Lakes area, substantial levels of short term employment have been created in Cross Lake. This has led to increased incomes and a higher level of skills among a large part of the local labour force. If these employment levels are to continue, a number of actions must be taken. It is recommended:

1. THAT job opportunities in the areas of forestry and tourism be investigated in detail and action be taken to ensure local participation.

2. THAT job opportunities in the provision of community services be fully exploited.

3. THAT the relevant Federal and Provincial agencies, in consultation with the community, develop a local employment strategy for Cross Lake.

4. THAT an all-weather road be built to link Cross Lake to areas in the vicinity that possesses high resource development potential.

3. The Transfer Payment Economy

The residents of Cross Lake received approximately $666,800 in government transfer payments during the period of April, 1972 to March, 1973. These payments were in the form of social assistance, family allowance and old age pensions, including guaranteed old age supplement payments. Social assistance accounted for $466,000 (70%) of total payments while family allowance and old age pension accounted for $96,000 (14%) and $104,000 (16%) respectively.

Unemployment insurance payments were not included because no data was available. However, personal communications with local residents seems to indicate that this program is not utilized to any appreciable extent by eligible local residents.

Social assistance payments are provided by two government agencies, the Department of Indian and Northern Affairs (INA) and the Department of Health and Social Development (H & SD) INA provides services to treaty residents while H & SD provides parallel services to non-treaty residents. During the fiscal year 1972/73, the treaty population at Cross Lake (1,170) received approximately $414,000 in payments. This amounted to $233 per capita per annum. Payments consisted of $126,000 (30%) for health reasons, $78,000 (19%) for social reasons, e.g., unwed mothers, orphans, etc., and $210,000 (51%) in payments to unemployed employables. (See Appendix 4 for details.)

Social assistance payments to non-treaty residents are provided by the Manitoba Department of Health and Social Development. Total payments during 1972/73 amounted to approximately $43,000. At a non-treaty population of approximately 230, the annual per capita payment was $186. By categories, payments were $7,500 (17%) for health reasons, $23,000 (53%) for social reasons and $13,000 (30%) to unemployed employables.

Comparison of these figures with social assistance payments to other northern remote communities and to the province in general indicates that Cross Lake is a community which is heavily dependent on social assistance. Figure 5 indicates that the community ranks highest in terms of social assistances of those locations presented. Provincially, per capita social assistance payments averaged between $65 and $70 for the same period. (Barber, 1972)

Family allowance payments of approximately $96,000 were made to mothers of 1,144 children between the ages of birth and

PER CAPITA SOCIAL ASSISTANCE PAYMENTS TO RESERVES - 1972

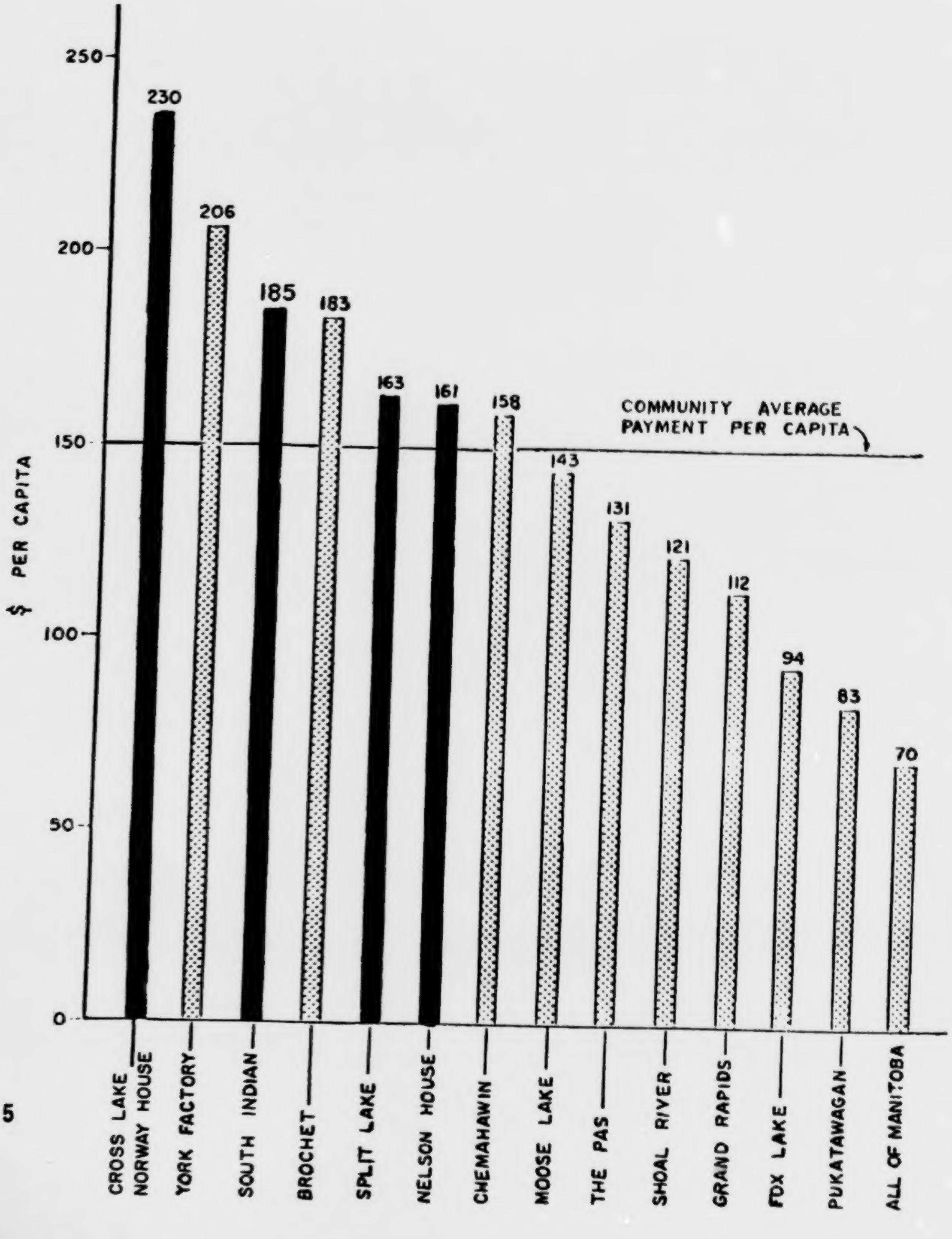

Fig. 5

18 years. It should be noted that payments made during 1972/73 were as follows:

Age 0 - 10 = $6/month/child
Age 10 - 16 = $8/month/child
Age 16 - 18 = $10/month/child

However, the current rate, effective since January 1974, is $20/month/child for all children up to the age of 18. This has resulted in an increase of at least $178,000 in family allowance payments to this community. This increase alone has had a substantial impact on the level of community income.

Old age pensions, including guaranteed income supplement payments of $104,000 were made to 60 residents of Cross Lake during 1972/73. An average figure of $145 per month per pensioner over the age of 65 was used in calculating this amount. This figure adjusts for variations in supplementary income payments. Again, current pension rates are substantially higher than those in force in 1972/73. At an average present rate of $183 per month, community income derived from this source has increased by at least $30,000 in the past year and one-half.

4. Community Infrastructure

The level of community services available in Cross Lake has steadily increased over the past fifteen to twenty years.[1] At present, there are six schools in the community, a nursing station, office facilities for local government, a post office, one large store (Hudson Bay Company), and a number of churches. Recreational facilities include two buildings which can be used as theatres, two outdoor hockey rinks, sport fields, beach facilities and a pool hall. There is also a small restaurant and general store in the community. Police services are provided by two band constables, one community constable and patrols by the R.C.M.P. There is no centralized water supply and sewage system. The community now has telephone and television service as well as diesel electric power services.

The transportation infrastructure can be divided into two categories, internal and external. Internal transportation facilities include gravel and dirt roads along the east side of the community. Four causeways provide links in the road system. However, there is no permanent road link across the

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[1] Information outlined in this discussion concerning the nature of community services available was primarily derived from Manitoba Department of Northern Affairs files.

Nelson River between the east and west portions of the community. During the open water this linkage is provided by a footbridge while, in winter, the ice is utilized as a transportation link. There is no commercial taxi or bus service available in the community. However, transportation of school children is provided by boat during open water and by bombardier during winter. Further, it should be noted that the Nelson River continues to be used as a main internal transportation system by boat in the summer and skidoo or bombardier in the winter. Residents tend to live near the shore to take advantage of this natural transportation facility.

External transportation services are provided, at present, by air, water and winter road. An airstrip is maintained and operated by Manitoba Department of Northern Affairs. Water transportation, via Whiskey Jack Portage, is provided during open water by M. & S. Freighting. The volume of freight shipped into the community via this route has declined over the last few years. Road transportation into the community is confined to the winter months. A winter road is constructed annually. Recently this road has run from the mouth of the Minago River (near the Jenpeg construction camp) across the ice on Cross Lake to the community. It is significant that a large proportion of the freight shipped into the community uses this mode of transportation.[1]

The effects of Manitoba Hydro's power development on the community infrastructure will center on transportation facilities and possible damage to structures in the community. There are 25 structures including four houses located at or below the regulated maximum water level (686.5 ft.).[2] Further wind set-up and ice conditions could result in damage to another 20 structures located below elevation 690.[3] Figure 6 illustrates these details. Internal transportation facilities could be inundated. At present, there are four causeways and four footbridges that are located below elevation 686.5 ft. However, these facilities have been subject to flooding in the past and the Department of Indian and Northern Affairs has undertaken a construction program to upgrade these structures this summer. There is also a possibility of deterioration of ice conditions in the community leading to the creation of a safety hazard related to winter transportation.

External transportation disruptions could be more significant. Higher summer water levels on Kiskittogisu Lake may

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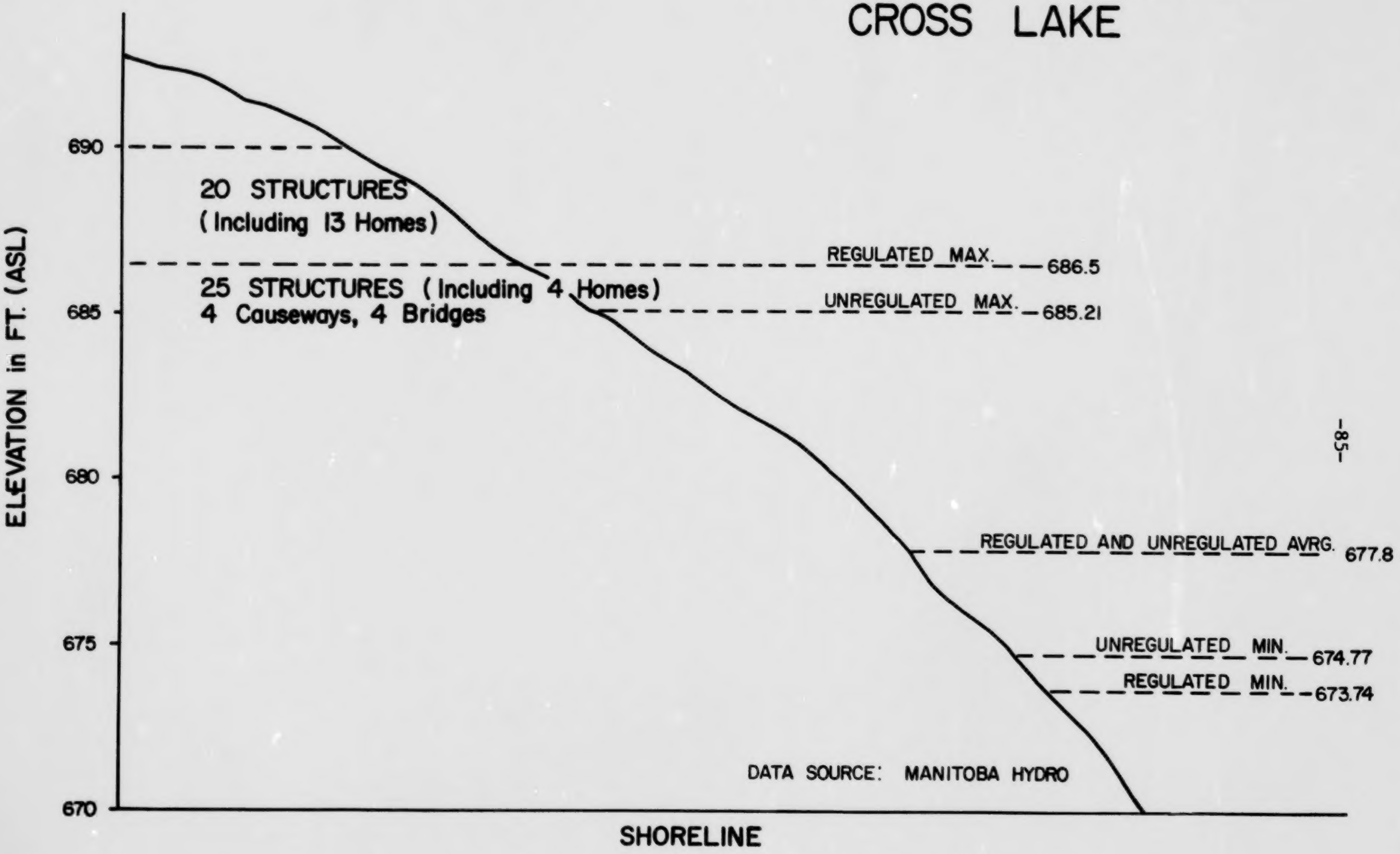
[1] During the winter of 1973/74, 2,512 tons of freight and some heavy equipment was shipped into the community over the winter road (Manitoba Department of Northern Affairs.)

[2] Real Property Assessment, Outlet Lakes Area, Lake Winnipeg, Churchill and Nelson Rivers Study Board.

[3] Water Level Study for Cross Lake Community, M. M. Dillon Ltd., January 1974.

REAL PROPERTY DAMAGE
CROSS LAKE



NOTE: THE SHORELINE SHOWN IS FOR ILLUSTRATIVE PURPOSES ONLY.
THE ACTUAL SHORELINE PROFILE VARIES SUBSTANTIALLY THROUGH OUT THE COMMUNITY.
LEVELS INDICATED ARE EXPRESSED AS MEAN MONTHLY LEVELS.

FIG. 6

result in periodic flooding of facilities located at this end of the Whiskey Jack Portage.[1] There is also a slight possibility that the wharf at the Cross Lake end of the portage will be flooded. The undetermined changes in ice conditions on Cross Lake could be the most critical factor in the provision of external transportation to Cross Lake.[2] Poor ice conditions after regulation could result in a serious disruption of freighting operations on the winter road. This would have negative implications for the general levels of services provided to the community and the cost of living since most freight enters Cross Lake via this route. In addition, tentative plans developed by the Manitoba Department of Northern Affairs indicate that Cross Lake will likely become the supply center for communities located in the northeastern part of the province. These include Oxford House, and the settlements on God's Lake and Island Lake. Future disruption of freighting to Cross Lake could therefore have repercussions on these communites. Established transportation patterns for trappers could also be disrupted by poor ice conditions.

After regulation a number of mitigation measures may be necessary.

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[1] Information received from Canada, Department of Public Works indicated that the elevation of this wharf is 713.5. The wharf at the Cross Lake end of the portage is recorded as elevation 685.

[2] Manitoba Hydro is presently undertaking a detailed ice study of Cross Lake. The report should be available in August, 1974.

Recommendations

1. THAT docks, homes and other structures in the community which might be affected by higher water levels be replaced or relocated by Manitoba Hydro after consultation with local representatives.

2. THAT, if poor ice conditions result in serious disruption of winter road freighting into the community, Manitoba Hydro provide an all-weather road link to Cross Lake to ensure adequate transportation services. It should be noted that a number of studies concerning this issue are available. (See Appendix 5)

3. THAT, if poor ice conditions in the community result from regulation, a program of monitoring and marking safe ice routes be undertaken as an interim measure and that final mitigation measures be determined in consultation with the community.

4. THAT the docking facilities at the Kiskittogisu end of Whiskey Jack Portage be upgraded by Manitoba Hydro to ensure continued use. If necessary, the facilities located at the Cross Lake end of the portage could also be reconstructed.

B. THE SOCIAL SYSTEM

1. The Social Profile

In order to understand the nature of social impact, it is first necessary to understand the rationale and anatomy of the community.[1] The community exists to perform certain specific functions:

- the economic function of production, distribution and consumption of goods and services,
- the socialization function of transmitting knowledge, social values and behaviour patterns to its individual members,
- the social control function of influencing its members toward conformity with its norms,
- the social participation function of providing

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[1] For a further discussion, see the final report, pp. 60-114.

an opportunity for its members to interact socially, and

-the mutual support function of providing mutual assistance daily, but especially in times of need or stress.

Arising out of the pursuit of these functions are many interrelated elements including history, beliefs, values, attitudes, norms, goals, leadership positions, power, sanctions for social control and facility. The elements, though interrelated, can be isolated and studied.

These elements find expression, and the functions are performed, through various recognized processes which include: communication; institutionalization (the way organizations assume a structure and act and interact in a predictable way); systemic linkage (the way community groups and organizations relate to each other to form an integrated community base and the way they relate to systems that are external to the community, e.g., local trapper's association, co-operative organization, community councils, churches, etc.); problem solving and decision making; and boundary maintenance (the process whereby a community strives to preserve its unique identity). It is important that these processes be traced in order to understand a community.

The functions, elements and processes mentioned above are interrelated. Therefore, the social impact of change on the community as a whole cannot be meaningfully studied. Rather, the study must assess the way in which change may affect some of the community elements; may interfere with some of the functions; may block, circumvent or subvert some of the processes; or generally influence some combination of elements, functions and processes to the point of generally disrupting the community activities and creating imbalances in a community's sub-system. This disruption will require adjustment and readjustment as the community seeks out and establishes new ways of thinking, believing, acting and interacting while it strives to maintain social equilibrium.

To understand, assess or even predict what the social impact of change may be with a view to suggesting and/or recommending appropriate mitigating social intervention, it is necessary to know a community. The following manner of isolating and studying the elements, functions and processes that constitute a community social system is designed to provide the necessary understanding.

(a) Knowledge and Beliefs

To understand what a community knows and believes about developments that will have (or are having) an effect on change, is to gain insight into:

- the community's sources of information - the channels of communication within the community and with the world outside,
- the degree of community information - whether it is specific, general, or non-existent - regarding certain changes, the impact of that change, etc.,
- whether the community can be expected to participate meaningfully in change on the basis of the knowledge it has, and
- what media of communication an external agency should use in getting information into the community and how communication within the community can be facilitated.

The knowledge and beliefs which are prevalent in a community are products of the quality and quantity of information received by the community and how effectively it is disseminated through the community.

1) Receiving Information

Regarding hydro developments, the community of Cross Lake has formally received information from a variety of sources:

- The Cross Lake-Norway House Co-ordinating Committee formed in 1971 has provided some information, both to the community leaders who are members of the committee, and initially to the communities themselves.

- Community meetings with Hydro representatives, with study personnel, and with provincial agency people provided information on a number of issues.

- Broadcasts over the local radio station introduced the interview team but provided very little information about the hydro development.

- A one hour television program (Twenty-four Hours) outlined the background behind the Churchill-Nelson Rivers development controversy. This program was general, and so provided no specific information about hydro related changes at Cross Lake.

- The Amisk Newsletter is geared specifically to events along the Churchill and Nelson Rivers.

- General news on both radio and television provided additional information.

In addition, the large number of residents who have worked on hydro related jobs in the Jenpeg area over the past 2-3 years have provided a significant informal source of information.

2) Disseminating Information

Cross Lake people identify informed individuals in the community as their primary source of information regarding hydro developments. These informed individuals may have received their original information informally through work experience or more deliberately and formally through committee and community meetings. Other major sources of information about hydro developments have been radio, visits elsewhere and meetings with the Band, with agency people or with people from other communities.

It is important to note that one of the major sources of information concerning local events is the local radio station (CFNC); this indicates the use of a formal, modern technique in the dissemination of community information. For a summary of information sources for various issues, see Table 14.

Beliefs arise out of the receipt and processing of information which reaches people. If beliefs about a particular issue, e.g., hydro development, are consistent with the best known information about that issue, then the information process is an effective one. In cases where beliefs are inconsistent with available knowledge, the problem becomes one of information-education. There are a number of prevalent beliefs in Cross Lake. For purposes of evaluating the information process, each of these beliefs is compared or contrasted with the best available information.

Generally, Cross Lake people believe that there will be some flooding, that the water will fluctuate unnaturally

Table 14

CROSS LAKE INFORMATION SOURCES[1]

ISSUES Source of Information	LOCAL EVENTS A Source	LOCAL EVENTS Prime Source	PROVINCIAL OR NATIONAL EVENTS A Source	PROVINCIAL OR NATIONAL EVENTS Prime Source	HYDRO DEVELOPMENTS A Source	HYDRO DEVELOPMENTS Prime Source
Formal Communications						
Radio	N. A.*		31	19	24	16
T.V.	N. A.		18	5	10	4
Printed Material	3	0	6	0	3	1
Notice Board in Bay	15	2	N. A.		N. A.	
Meetings (Band, Agency, etc.)	15	4	19	3	17	6
Informal Communications						
Visits Outside	N. A.		4	1	8	2
Informed Individuals in Community	11	4	15	5	18	7
General Discussion with Friends	33	20	N. A.		N. A.	
Regular Chit-Chat in Bay Store	19	4	N. A.		N. A.	
Regular Chit-Chat in Band Office	5	1	N. A.		N. A.	

*N. A. = Not asked and/or not relevant.

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[1] Derived from interviews in the community.

and that there will be an increased sediment load in the water. They believe that these changes will have the following impacts:

1. The majority of people anticipate that there will be disruptions of the natural resources in the area and the loss of the traditional activities associated with them. The most commonly mentioned resources are fish, moose and ducks; others include furbearers, land, timber and grasslands which have an agricultural potential. In contrast, information to date indicates that impacts on fishing, shorelines and wildlife, with the exception of beaver and muskrats, will be minor. For further detail on this topic see, "The Economy," pp. 34 to 87.

2. Damage to the community's infrastructure is anticipated, particularly with respect to water quality, but also in terms of winter roads, local roads and causeways, and a general community disruption. On the basis of investigations to date, it is anticipated that there could be considerable disruption of existing road transportation facilities into Cross Lake and within the community. However, it is not anticipated that water quality will be

adversely affected by hydro development.

3. There is some concern for the unemployment problem which they believe the community will face when hydro developments are completed. This appears to be a realistic concern which is dealt with in greater detail in "The Economy," pp. 34-87.

On the basis of these observations, a number of conclusions may be drawn:

1. The community's beliefs appear to indicate that people have a relatively good general understanding of the changes in water regime and the impacts which may result.

2. While some of the leadership nucleus may have a good understanding, the word of mouth method of information dissemination is insufficient to provide the majority of the community people with a sound knowledge of the specific details of either the developments or the anticipated impacts.

3. The existence of a local radio station, and the considerable dependence on this source of information provides a relatively unique opportunity for the broad dissemination of objective, first-hand information.

4. Written material is not an effective means of distributing information.

(b) Values and Attitudes

An understanding of basic values and attitudes provides a useful insight into the social, political and economic atmosphere of a community, and the reaction of a community in the process of change.

In a transitional community, new values are emerging, often conflicting with and, therefore, adapting old values. Thus, values change with time but will occur much more slowly than technical change, for example.

Attitudes are formed on the basis of knowledge, beliefs, values and feelings and are thus a product of information, experience, and emotion. As such, they contain a personal conviction which cause attitudes, like values, to be resistent to change.

In Cross Lake, there appears to be a fairly distinct difference between the values of the older people (over about 40-45 years) and those of the younger people. The younger people have a relatively modern world view for a remote community. Attached to this modern view are new emerging values, particularly in relation to earning a living. Whereas many of the older people are still tied to the traditional activities of hunting, trapping and fishing, the vast majority of the young place a greater value on the wage economy or the wage and welfare economy. This emphasis on wage employment is giving rise to attitudes associated with the more modern industrial society, e.g., greater mobility, decreasing family and community ties, and generally learning how to live within and "use" the system.

Thus, the values and attitudes of the younger residents of Cross Lake are likely to cause them to identify new possibilities arising out of the hydro developments. Conversely, the values and attitudes of the older people will cause them to resist the changes imposed by northern development in general and the hydro developments in particular.

(c) Leadership

In a traditional community, gathering its livelihood from the land and living in relative isolation from outside services, the social and political structure tends to be simple and functional. People live in extended family groupings, each one looking to its family head for leadership. When a number of these families are living together as a community, it is customary for one or two families to gain more influence than the others. The heads of these families tend to become the dominant leaders in the settlement. In this situation, leadership is concentrated among very few older patriarchs in the community.

In order to determine the present leadership structure in Cross Lake, a variety of opinions were solicited. The following three groups were asked to identify the leaders:

1. "outsiders" who have had close contact with the community for some extended period of time,

2. the leaders as identified by this group, and

3. the general community - the rank and file.

As Cross Lake has grown and become more complex, the leadership structure has broadened significantly. There is no longer the small core of leadership characteristic of traditional communities. In addition, the majority of the leaders are middle-aged, rather than elderly.

Local people and the nominating panel identified 83 and 82 individuals as leaders, respectively. The leaders themselves identified a much smaller number, 35. The large number of leaders named and the substantial difference in the number named indicates:

a) that there are many individuals who have leadership qualities, and

b) that many of these individuals may not currently be in leadership roles but have been so in the past.

The consistency of opinion, in terms of who the major leaders are, reveals that the leadership structure is well understood by all groups. The results obtained indicate a complex, relatively modern structure. (See Table 15.)

Table 15

LEADERSHIP AND POWER RELATIONS

			BY FREQUENCY			
Leader	of 32 Community	Rank	of 10 Outside	Rank	of 8 Leaders	Rank
A.	26	1	8	1	7	1
B.	23	3	4	9	6	2
C.	9		5	5	6	2
D.	22	4	5	5	5	4
E.	26	1	4	9	4	5
F.	14	6	5	5	4	5
G.	8		7	3	4	5
H.	14	6	3		3	8
I.	0		0		3	8
J.	2		1		3	8
K.	2		1		2	
L.	0		1		2	
M.	3		1		2	
N.	4		0		2	
O.	2		4		2	
P.	12	8	5	5	2	
Q.	2		0		2	
R.	16	5	1		2	
S.	8		0		2	
T.	4		1		2	
U.	3		8	1	1	
V.	11	9	1		1	
W.	11	9	0		1	
X.	4		2		1	
Y.	5		6	4	1	
Z.	0		3		1	
	+56 others mentioned		+57 others mentioned		+9 others mentioned	

The complexity results largely from the existence of two separate community entities, the non-treaty group and the treaty group. Each of these groups has its own formal power structure, institutionalized as the Mayor and Council (the Community Council) and the Chief and Council (the Band Council), respectively.

In Cross Lake the treaty Indians who were identified as leaders are almost exclusively members of the Council. On the other hand, only 1/2 of the identified non-treaty leaders were Council members and not as many of the Council members were identified as leaders.

This situation gives rise to the observation that leadership is more institutionalized in the treaty group.

At least two factors combine to create this situation:

1. The Mayor and Council was formed only after the implementation of the Northern Affairs Act in 1970. Prior to that time, non-treaty leadership was by an informal "headman" arrangement. Thus the institutionalization of leadership, in terms of both leaders and their followers, is in an "adolescent" stage.

2. The type of decision-making utilized by the Treaty Council tends to focus more attention on the elected leaders.

The duality of this leadership structure also gives rise to power patterns which are both complex and subject to modification with each situation.

Each of the two Councils have some clearly delineated areas of responsibility and in these instances the power structures of the two groups are clearly separated. This gives rise to two discrete power structures, each of which relate to different government bureaucracies.

This situation is unfortunate in that the two groups are subject to different policies, programs and delivery systems. This gives rise to differing levels of responsibility and authority of the two Councils and differing opportunities for individuals. Thus, despite the fact that the groups are living together in one community, there is an acute awareness in both the power echelons and the rank and file, of two distinct factions.

Each Council has an explicit mandate to administer certain programs but there is generally also an implicit mandate or responsibility to sanction all activities related to their respective clientele. This is particularly applicable to the Band Council which is more institutionalized in people's minds. In areas of community planning and decision-making outside the explicit mandate, the power structure becomes further complicated, both by the inclusion of more committees or organizations and by the potential for a power struggle between the two Councils.

Thus, when planning and decisions are required for the community as a whole, rather than for one entity or the other, there is a definite need to consciously co-ordinate the activities of the two factions. The initiative for this co-ordination can come from the community itself but should be facilitated rather than impeded by the efforts (policy, program, delivery) of governments. One rather simplistic example of the division and entanglement of power is in the area of social control, where the RCMP have jurisdiction over the whole community, the two Band Constables have jurisdiction over the treaty element, and the Community Constable has jurisdiction over the non-treaty group.

(d) Decision Making

In the distant past, in Cross Lake, as in other remote communities, leadership was achieved by reputation. People were not elected to formal positions nor were they given specific guidelines, rules and parameters upon which to exercise the authority of their position. As a result, the exercise of the power and privilege associated with leadership was usually subtle and indirect. This indirect leadership influence resulted in a slow process through which community decisions were postponed or delayed until a consensus was reached. The consensus decision-making process proved both advantageous and appropriate; advantageous in that it was an effective method of preventing or managing conflict and turmoil in the community; appropriate in that the decisions required were of a local nature and few in number.

With the institutionalization of the Treaty Council, Band decision-making gradually moved away from the traditional consensus approach and became more formalized. However, in the case of the non-treaty element, decision-making remained with the reputational leader, the headman, until the creation of the elected Mayor and Council in 1970.

Today, with the growing number of decisions required and the increasing size and complexity of the community, both the treaty and non-treaty councils make decisions directly with a minimum of public input. This form of decision-making has an advantage in terms of the amount of time required but has the disadvantage, voiced by a number of people, that the community is no longer involved in the decision-making process. As a result, there is a "no one knows what's going on" attitude. There is disagreement on the cause of this situation in that some say there are not as many meetings as there used to be, while others say that there are fewer meetings because of general community apathy.

While both Councils utilize a similar decision-making process, there is some indication that the Mayor and Council are not involved in as many of the decisions affecting the non-treaty entity as is the case with the Chief and Council for the treaty group. This situation probably results from:

a) the broader mandate of the Band Council, and

b) the longer history of involvement, resulting in a greater institutionalization of the Treaty Council in the minds of their people.

2. Social Impact

(a) Operational Definition

As stated earlier, the elements and processes in a social system are interrelated and, therefore, change in one component will result in subsequent change in other sectors. Cross Lake is a community in the process of change, in a transitional state between the traditional economy and the wage economy. Accompanying these changes in the economic sector are changes in the social system.

The situation which faces the community now is one of continued change, but change at an accelerated rate due to the existence of hydro developments.

The social impact is the stress which is placed on the community's social system when it is not able to adjust to change as quickly as that change is occurring.

(b) Discussion

A community must develop new ways of doing things in order to be in control of change, especially when the change is inevitable and even imposed. Some changes are relatively easy to achieve. For example, when a utility changes water levels, other inherent physical changes, environmental changes and economic changes follow naturally even though they may be resisted. Similarly, it is easy to effect changes in a community communication system, e.g., when a community suddenly has access to telephones and television, or in a community's transportation system, e.g., when a road comes to the community or a community gets an airstrip and scheduled air run.

However, the rate of technological change is invariably more rapid than cultural changes involving change in perceptions, beliefs, values and social structures. Therefore, resistance to technological change is inevitable. When technological change proceeds despite this resistance, pressure is exerted on the elements and processes (the social system) of the community.

The ability of a community to cope with change and the stress inherent in change[1] will depend largely on a community's autonomy and viability, taken together to mean the capacity of a community to function effectively on a self-determinism basis, i.e., to perform independently the economic, socialization, social control, social participation and mutual support functions.

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[1] For a detailed analysis of the social stress which accompanies rapid change, see Technical Report #1, Social Change and Stress.

In summary, social impact in a community is inversely related to the degree of control over change which the community can exercise. However, due to the interrelatedness of the components of the social system, social change cannot be viewed as proceeding along a fixed course to a fixed destination and, therefore, social impact cannot be predicted in terms of specific "happenings" or effects.

The difficulty of predicting specifics and the premise that impact is related to community autonomy and viability gives rise to the need to assess the elements and processes of the community in terms of the level of autonomy which they appear to represent. This approach will:

1. provide useful baseline data for future monitoring, and

2. indicate the kinds of inputs which may be necessary to assist a community caught up in the dynamics of change to cope with the new situation.

(c) Impacts on Elements & Processes of the Social System

1) Knowledge (About Hydro Developments)

The community as a whole has a fairly good general understanding of the changes in water regime and the implications of those changes on the community's resources and infrastructure. However, they appear to lack specific, detailed knowledge about the anticipated changes which in turn gives rise to distortion and exaggeration about the future.

This situation results from the way in which information has reached and been disseminated through the community. Cross Lake residents do not use written material as a source of information As a result, the majority of Cross Lake residents have received their information indirectly through other individuals in the community whom they consider to be informed.

There are two problems associated with this method of information dissemination:

1. the informed individuals have themselves, received information in "bits and pieces" rather than as a complete comprehensive package, and

2. this indirect word of mouth procedure tends to distort or generalize information of a complex, technical nature, such as information about the hydro development and its expected impacts.

At present, most Cross Lake residents appear to have a reasonable amount of information about hydro developments and therefore are subject to a minimal amount of psychological stress regarding the unknown. However, there are certain interest groups which are under considerable stress as a result of previous experiences and the lack of specific information related to resource impacts. This is particularly applicable to older fishermen and trappers who experienced the more dramatic effects of the Sipiwesk forebay and who have received no information to dispel fears that similar impacts will occur in the Cross Lake area. Furthermore, the current level of knowledge is not sufficient for the community to plan, or to participate meaningfully in planning, for the changes which will occur. This information is required particularly by the leaders who participate in community planning.

Recommendation

THAT, at the discretion of and in consultation with the six community Northern Flood Committees and the Cross Lake Band and Community Councils, an information-communication process be set up.

This process could be geared to provide:

a) the information required by community leaders in order to participate meaningfully in planning for change,

b) the information regarding expected resource impact required by interest groups, such as fishermen and trappers, and

c) detailed information for the benefit of the general community.

In view of the considerable use made of the local radio (CFNC) and the good general understanding of the hydro developments by the community, a suitable mechanism for the latter may be through question and answer programs on the local radio station.

2) Leadership

The most distinctive feature of the Cross Lake leadership is its duality. The leadership core lies largely within the two elected Councils and a few other influential individuals. However, there are many other leaders on the periphery of this leadership core.

In the case of the treaty people, who comprise 88.5% of the population, the Band Council has the responsibility for administering (financially and managerially) all ongoing programs relating to their clientele. The Band Council is perceived as being highly institutionalized. in the minds of both the leaders themselves and the rank and file.

In the case of the non-treaty people, leadership is more diverse with only one-half of the leaders being members of the Community Council. This Council represents 11.5% of the population and their current responsibilities are limited to lobbying for various programs for their members.

Generally, one sector or the other deals with an issue by using the agency channels which that sector best understands. There is an increasing need for community planning and action rather than the sectoral approach. However, it will be difficult for the community to pursue a co-ordinated approach if the governmental agencies with which it deals do not adopt a similar approach.

The changes accompanying the current hydro developments will affect both segments of the community, the clientele of both the federal and provincial governments, and the inputs of many departments and branches of those governments. The need for community planning for these changes provides the opportunity (and the necessity) for both the community and all agencies of government to co-ordinate their approach to community problem solving.

3) Decision Making

The majority of decisions about local community affairs are made sectorally by either the Band Council or the Community Council. Many of the decisions made by the Band Council are more substantive than those of the Community Council because of the broader authority and responsibility held by the Band.

The two Councils use the same decision-making technique, that of direct decisions by the Council without the input of public opinion or referendum. This system of decision-making has the advantage of time efficiency while holding the inherent danger of lack of commitment or support from the general populace.

The need to solve the many and varied problems associated with rapid change has put unprecedented pressures on community decision-makers, who must now deal with a large number of more complex issues in a smaller amount of time than ever before. The community of Cross Lake has a modern form of decision-making which allows it to make many decisions, and quickly. Thus, it is equipped to handle the new pressures caused by the hydro developments. However, with the increasing complexity of the decisions required, it is becoming more difficult for a core of the leaders to acquire adequate background information upon which to base decisions. Furthermore, most decisions are being made sectorally, despite the urgent need for community decisions. Therefore, as change continues there will be an increasing need for joint planning (treaty and non-treaty) or advisory committees to co-ordinate the efforts of the two sectors in the community.

Recommendations

1. THAT information regarding the nature, function and operation of joint planning or advisory committees

be provided to the community.

2. THAT, in the event that such committees are established, appropriate government agencies enhance the effectiveness of these committees through the provision of relevant technical information and expertise.

(d) Ability to Cope with Change

The foregoing analysis of the Cross Lake social system suggests that, on the basis of standards applicable to remote northern communities, Cross Lake is relatively sophisticated and modern. This in turn, indicates that much change has already taken place in recent years, and that the individuals and systems are more receptive and/or adaptable to change than would be the case in a more traditional community.

Some inherent difficulties which may limit this adaptive capacity has been pointed out and mitigating measures have been suggested. However, because the components of the social system are interrelated, changes in one element or process will cause changes in others. This may enhance or reduce the community's capacity to cope with further change. Since it is impossible to predict specific changes and impacts, constant monitoring of the community's social and economic situation is required.

Recommendations

1. THAT a system of monitoring non-physical changes in Cross Lake be set up.

2. THAT appropriate social intervention be provided as the need is identified through the monitoring process.

 This could take the form of workshops for understanding, perceiving and coping with changes; problem-solving techniques; new life skills; use of information; and leadership training.

APPENDICES

1. THE WILD FUR DEVELOPMENT PROGRAM
2. CROSS LAKE: COMMUNITY INCOME FROM COMMERCIAL FISHERY
3. METHODOLOGY FOR DERIVATION OF INCOME-IN-KIND ESTIMATES
4. SOCIAL ASSISTANCE DATA AND CALCULATION OF FAMILY ALLOWANCE AND OLD AGE PENSION
5. STUDIES CONCERNING AN ALL-WEATHER ROAD TO CROSS LAKE

APPENDIX 1

THE WILD FUR DEVELOPMENT PROGRAM

During 1973, the Manitoba Department of Mines, Resources and Environmental Management put forward a proposal for a Wild Fur Development Program with the objective of maximizing "the social and economic benefits of trappers from optimum development of the wild fur resource."[1] In its introduction, the underutilization of Manitoba's wild fur resources is discussed and a number of specific problems cited. The Manitoba Government's natural resource policy stating that utilization of local resources must be consistent with increased opportunity for rural and northern residents to stay in their home communities is mentioned as a major justification for the program. This statement leads to the contention that the program must have substantial local participation in all phases of its development. A final point of note is that the program will be directed toward commercial utilization of the wild fur resource as opposed to recreational utilization.

THE PROGRAM

The program is to be co-ordinated by a fur specialist responsible to the Chief of Wildlife Programs, Development and

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[1] Wild Fur Development Program, Manitoba, Draft #5, Department of Mines, Resources and Environmental Management, September 1973.

Extension, Department of Mines, Resources & Environmental Management. A fur manager would be appointed for each resource management region to co-ordinate the program within each region and to facilitate trapper participation in the program. Trapline officers and other Mines, Resources & Environmental Management staff will provide inputs as required.

Local trapper participation in the development, implementation and operation of the program is and will continue to be facilitated through the Manitoba Registered Trappers' Association (MRTA), and its relevant Local Fur Councils. The MRTA is responsible for the operation and administration of local fur depots, a humane trap exchange program, seasonal financing ("grubstaking"), recommendation of capital loans and grants to trappers and, in consultation with the fur specialist, the development of programs to alleviate social and physical conditions which may tend to adversely affect trapping. The stated intention of this substantial involvement of local trappers and their Association is that, over time, Government control and direction would be reduced in favour of increased control by the local fur councils and the MRTA.

The operation of local fur depots is an attempt to ensure a more direct access to fur markets and, hence, the possibility of higher returns to the trapper. Further, local control of these facilities will provide more local employment and an opportunity to develop management skills within each community.

THE PROGRAM'S RELATIONSHIP TO MITIGATION OF MANITOBA HYDRO DEVELOPMENT

The discussion of compensation and development contained in the "Framework and Study Approach"[1] points out that it is desirable to ensure that lifestyle options remain after hydro development. One option is the traditional lifestyle associated with trapping, fishing and hunting activities. Further, it is Manitoba Government policy to utilize, wherever possible, existing programs to achieve the above aim. The Wild Fur Program can be viewed as being within this context. As such, the acceleration of program implementation with particular emphasis on the local inputs of the various community fur councils appears to be one development mechanism which is available. It is felt that this action would contribute to the orderly adjustment of the affected R.T.L. sections, particularly in the vicinity of Cross Lake and Nelson House and, hence, tend to ensure the maintenance of trapping as a lifestyle option available to residents of the remote northern communities analyzed in this study.

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[1] See the final report, pp. 60-114.

APPENDIX 2

CROSS LAKE

COMMUNITY INCOME FROM COMMERCIAL FISHERY*

SUMMER - 1969

LAKE	WHITEFISH CLASSIFICATION	QUOTA LBS.	HARVEST LBS.	FISHERMEN'S GROSS INCOME $	PRODUCTION COSTS ($0.06/LB.) $	FISHERMEN'S NET INCOME $	NO. OF LICENCES
CROSS	EXPORT STANDARD	100,000	92,980	13,951.15	5,578	8,372.35	16
PIPESTONE	EXPORT STANDARD	30,000	29,345	3,740.20	1,760	1,979.50	5
WALKER	CONTINENTAL	85,000	66,453	8,147.29	3,987	4,160.08	8
SEASONAL TOTALS		215,000	188,778	25,838.64	11,326	14,511.96	29

Number of local fishermen: 23

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*Source: Manitoba Department of Mines, Resources and Environmental Management.
Freshwater Fish Marketing Corporation.

CROSS LAKE

COMMUNITY INCOME FROM COMMERCIAL FISHERY*

WINTER - 1969/70

LAKE	WHITEFISH CLASSIFICATION	QUOTA LBS.	HARVEST LBS.	FISHERMEN'S GROSS INCOME $	PRODUCTION COSTS ($0.06/LB.) $	FISHERMEN'S NET INCOME $	NO. OF LICENCES
DRUNKEN	EXPORT STANDARD	10,000	2,473	510	197	313	-
KISKITTO	EXPORT STANDARD	30,000	460	62	36	26	-
KISKITTOGISU	EXPORT STANDARD	50,000	808	160	64	96	-
SEASONAL TOTALS		90,000	4,741	732	297	435	

Number of local fishermen: 1 (hired man)

*Source: Manitoba Department of Mines, Resources and Environmental Management.
Freshwater Fish Marketing Corporation.

CROSS LAKE

COMMUNITY INCOME FROM COMMERCIAL FISHERY[*]

SUMMER - 1970

LAKE	WHITEFISH CLASSIFICATION	QUOTA LBS.	HARVEST LBS.	FISHERMEN'S GROSS INCOME $	PRODUCTION COSTS ($0.06/LB.) $	FISHERMEN'S NET INCOME $	NO. OF LICENCES
CROSS	EXPORT PREMIUM	100,000	103,106	24,584	6,186	18,401	11
DRUNKEN	EXPORT PREMIUM	10,000	710	2,346	423	1,922	1
DUCK	EXPORT PREMIUM	30,000	5,382	1,115	322	792	1
KISKITTO	EXPORT STANDARD	30,000	8,895	1,851	533	1,318	2
KISKITTOGISU	EXPORT STANDARD	50,000	31,255	9,650	1,875	7,775	2
WALKER	CONTINENTAL	85,000	75,082	19,420	4,504	14,915	13
SEASONAL TOTALS		305,000	244,430	58,966	13,843	45,125	30

Number of local fishermen: 22

CROSS LAKE

COMMUNITY INCOME FROM COMMERCIAL FISHERY*

WINTER - 1970/71

LAKE	WHITEFISH CLASSIFICATION	QUOTA LBS.	HARVEST LBS.	FISHERMEN'S GROSS INCOME $	PRODUCTION COSTS ($0.06/LB.) $	FISHERMEN'S NET INCOME $	NO. OF LICENCES
KISKITTO	EXPORT STANDARD	15,000	2,715	638	216	421	-

Number of local fishermen: 2 (both hired men)

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*Source: Manitoba Department of Mines, Resources and Environmental Management.
Freshwater Fish Marketing Corporation.

CROSS LAKE

COMMUNITY INCOME FROM COMMERCIAL FISHERY*

SUMMER - 1971

LAKE	WHITEFISH CLASSIFICATION	QUOTA LBS.	HARVEST LBS.	FISHERMEN'S GROSS INCOME $	PRODUCTION COSTS ($0.06/LB.) $	FISHERMEN'S NET INCOME $	NO. OF LICENCES
CROSS	EXPORT PREMIUM	100,000	88,937	20,836	4,802	16,034	15
GRASSY LAKE (KISKITTOGISU)	CONTINENTAL	50,000	4,080	1,265	244	1,021	1
WALKER	CONTINENTAL	85,000	50,627	17,384	3,038	14,346	10
SEASONAL TOTALS		235,000	143,644	39,485	8,084	31,401	26

Number of local fishermen: 16

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* Source: Manitoba Department of Mines, Resources and Environmental Management.
Freshwater Fish Marketing Corporation.

CROSS LAKE

COMMUNITY INCOME FROM COMMERCIAL FISHERY*

WINTER - 1971/72

LAKE	WHITEFISH CLASSIFICATION	QUOTA LBS.	HARVEST LBS.	FISHERMEN'S GROSS INCOME $	PRODUCTION COSTS ($0.06/LB.) $	FISHERMEN'S NET INCOME $	NO. OF LICENCES
KISKITTO	EXPORT STANDARD	30,000	5,073	856	405	450	1
PIPESTONE	EXPORT STANDARD	30,000	10,048	2,398	804	1,594	4
SEASONAL TOTALS		60,000	15,121	3,254	1,209	2,044	5

Number of local fishermen: 4

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*Source: Manitoba Department of Mines, Resources and Environmental Management.
Freshwater Fish Marketing Corporation.

CROSS LAKE

COMMUNITY INCOME FROM COMMERCIAL FISHERY*

SUMMER - 1972

LAKE	WHITEFISH CLASSIFICATION	QUOTA LBS.	HARVEST LBS.	FISHERMEN'S GROSS INCOME $	PRODUCTION COSTS ($0.06/LB.) $	FISHERMEN'S NET INCOME $	NO. OF LICENCES
CROSS	EXPORT PREMIUM	100,000	95,604	15,930	5,736	10,194	11
KISKITTO	EXPORT STANDARD	30,000	8,383	1,704	503	1,201	1
SEASONAL TOTALS		130,000	103,987	16,634	6,239	11,395	12

Number of local fishermen: 12

*Source: Manitoba Department of Mines, Resources and Environmental Management.
Freshwater Fish Marketing Corporation.

CROSS LAKE

COMMUNITY INCOME FROM COMMERCIAL FISHERY*

WINTER - 1972/73

LAKE	WHITEFISH CLASSIFICATION	QUOTA LBS.	HARVEST LBS.	FISHERMEN'S GROSS INCOME $	PRODUCTION COSTS ($0.06/LB.) $	FISHERMEN'S NET INCOME $	NO. OF LICENCES
DRUNKEN	EXPORT STANDARD	10,000	3,096	332	124	208	-
PIPESTONE	EXPORT STANDARD	30,000	19,692	3,324	1,575	1,749	4
SEASONAL TOTALS		40,000	22,188	3,656	1,699	1,957	4

Number of local fishermen: 5

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*Source: Manitoba Department of Mines, Resources and Environmental Management.
Freshwater Fish Marketing Corporation.

CROSS LAKE

COMMUNITY INCOME FROM COMMERCIAL FISHERY*

SUMMER - 1973

LAKE	WHITEFISH CLASSIFICATION	QUOTA LBS.	HARVEST LBS.	FISHERMEN'S GROSS INCOME $	PRODUCTION COSTS ($0.06/LB.) $	FISHERMEN'S NET INCOME $	NO. OF LICENCES
CROSS	EXPORT PREMIUM	100,000	72,707	23,412	4,303	19,049	11
KISKITTOGISU	EXPORT STANDARD	50,000	23,905	6,153	1,434	4,719	2
WALKER	CONTINENTAL	85,000	63,817	21,187	3,829	17,358	12
WHITEMUD FALLS	STURGEON	4,000	3,293	2,963	197	2,766	1
SEASONAL TOTALS		239,000	163,722	53,715	9,823	43,892	26

Number of local fishermen: 21

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*Source: Manitoba Department of Mines, Resources and Environmental Management.
Freshwater Fish Marketing Corporation.

APPENDIX 3

METHODOLOGY FOR DERIVATION OF INCOME-IN-KIND ESTIMATES

The methodology employed to derive estimates of income-in-kind accruing to the remote communities under study is based on the premise of opportunity cost. It is argued that hunting, trapping and fishing activity provide a source of food which, if lost, would have to be replaced by resorting to retail purchases from local stores. Therefore, food derived from the above activities was evaluated on the basis of the costs avoided by not having to make equivalent retail purchases. The methodology consists of the following steps:

1. average household size and number of households were derived from demographic data, e.g., Cross Lake - 285 households with an average size of 7 persons.

2. consumption data specifying number of meals by specie by season and number of households consuming were derived from questionnaire responses. The questionnaire was undertaken by the Socio-Economic Study Team. It was assumed that the sample was random thus

allowing direct, linear application of results to the total community population, e.g., Cross Lake - 2.8 meals/week/household of fish in the winter for 84% of the sample.

3. estimates of the total number of meals by specie by season for the community were derived from data outlined in steps 1 and 2, e.g., Cross Lake - winter - fish 84% of households consumed 2.8 meals/week for a 14 week season. Therefore, total number of meals consumed was - (285 x .84) x 2.8 x 14 = 9,369.

4. unit prices of comparable commercial food in Cross Lake were derived from Food Price Indexes, Manitoba Bureau of Statistics, January, 1974 and discussions with local store personnel. These prices were applied to a conservative consumption estimate of 3.5 lbs. of produce per meal per household to derive a value per meal per household. e.g., Cross Lake - winter - fish unit price of $1.15/lb. x 3.5 lbs. = approximately $4.00.

5. value per meal per household was applied to the total number of meals per specie, per season to

> derive a total value of a particular specie by season, e.g., Cross Lake - winter - fish - 9,369 meals at $4.00 per meal = approximately $37,000.

If more detailed information is required regarding questionnaire results or other material mentioned above, it can be obtained upon request from the Social and Economic Impact Study Team, Lake Winnipeg, Churchill & Nelson Rivers Study, 693 Taylor Avenue, Winnipeg, Manitoba.

APPENDIX 4 SOCIAL ASSISTANCE DATA AND CALCULATION OF FAMILY ALLOWANCE AND OLD AGE PENSION

FEDERAL & PROVINCIAL SOCIAL ASSISTANCE PAYMENTS - CROSS LAKE - 1972/73*

Month	Medical	Social	Unemployed Employables	Total
April	$ 12,313	$ 10,703	$ 22,498	$ 45,515
May	11,826	10,482	20,225	42,534
June	9,855	9,702	17,572	37,129
July	9,977	9,337	18,240	37,554
August	10,220	9,554	21,652	41,426
September	10,538	7,803	19,411	37,751
October	11,570	8,332	12,084	31,986
November	11,227	7,176	18,412	36,816
December	12,916	6,891	20,405	40,211
January	12,548	7,628	23,334	43,509
February	13,362	7,404	19,874	40,640
March	7,292	5,175	8,848	21,315
TOTAL	$133,644	$100,187	$222,555	$456,386
%	29%	22%	49%	100%
AVERAGE	$ 11,137	$ 8,348	$ 18,547	$ 38,032

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*SOURCE: Government of Canada, Department of Indian & Northern Affairs.
Government of Manitoba, Department of Health & Social Development.

FEDERAL SOCIAL ASSISTANCE

PAYMENTS - CROSS LAKE - 1972/73*

Month	Medical	Social	Unemployed Employables	Total
April	$ 11,647	$ 8,468	$ 21,436	$ 41,551
May	11,183	8,259	19,170	38,612
June	9,140	7,845	16,482	33,467
July	9,102	7,565	17,134	33,801
August	9,370	7,817	20,570	37,757
September	10,200	6,259	17,916	39,375
October	11,220	6,338	10,916	28,474
November	10,672	5,504	17,212	33,388
December	12,365	5,051	19,013	36,429
January	11,829	5,959	21,961	39,749
February	12,662	5,484	19,368	37,514
March	6,795	3,049	8,705	18,549
TOTAL	$126,185	$77,598	$209,883	$413,666
%	30%	19%	51%	100%
AVERAGE	$ 10,515	$ 6,466	$ 17,491	$ 34,472

*SOURCE: Government of Canada, Department of Indian & Northern Affairs.

PROVINCIAL SOCIAL ASSISTANCE

PAYMENTS - CROSS LAKE - 1972/73*

Month	Medical	Social	Unemployed Employables	Total
April	$ 666	$ 2,235	$ 1,026	$ 3,963
May	643	2,223	1,055	3,992
June	715	1,857	1,090	3,662
July	875	1,772	1,106	3,753
August	850	1,737	1,082	3,669
September	338	1,544	1,495	3,377
October	350	1,994	1,168	3,512
November	555	1,672	1,200	3,428
December	551	1,840	1,392	3,782
January	719	1,669	1,373	3,760
February	700	1,920	506	3,126
March	497	2,126	143	2,766
TOTAL	$7,459	$22,589	$12,672	$42,720
%	17%	53%	30%	100%
AVERAGE	$ 622	$ 1,882	$ 1,056	$ 3,560

*SOURCE: Government of Manitoba, Department of Health & Social Development.

NUMBER OF RESIDENTS
RECEIVING SOCIAL ASSISTANCE - CROSS LAKE - 1972/73*

Month	Medical	Social	Unemployed Employables	Total
April	212	268	476	956
May	203	262	675	1,140
June	179	265	498	942
July	176	225	612	1,013
August	192	246	677	1,115
September	203	229	649	1,081
October	142	226	422	792
November	197	200	569	966
December	240	115	651	1,008
January	214	123	710	1,047
February	278	164	684	1,126
March	197	201	542	940
AVERAGE	203	210	597	1,010
%	20%	21%	59%	100%
% OF POPULATION	10%	11%	30%	51%

*SOURCE: Government of Canada, Department of Indian & Northern Affairs.
Government of Manitoba, Department of Health & Social Development.

NUMBER OF RESIDENTS RECEIVING
FEDERAL SOCIAL ASSISTANCE - CROSS LAKE - 1972/73*

Month	Medical	Social	Unemployed Employables	Total
April	199	236	428	863
May	189	222	626	1,037
June	165	221	439	825
July	162	192	565	919
August	179	213	634	1,026
September	191	196	588	975
October	130	95	371	696
November	185	168	525	878
December	229	83	609	921
January	202	93	658	953
February	267	128	652	1,047
March	186	165	530	881
AVERAGE	190	176	552	918
%	21%	19%	60%	100%
% OF POPULATION	10%	9%	27%	46%

*SOURCE: Government of Canada, Department of Indian & Northern Affairs.

NUMBER OF RESIDENTS RECEIVING

PROVINCIAL SOCIAL ASSISTANCE - CROSS LAKE - 1972/73*

Month	Medical	Social	Unemployed Employables	Total
April	13	32	48	93
May	14	40	49	103
June	14	44	59	117
July	14	33	47	94
August	13	33	43	89
September	12	33	61	106
October	12	31	53	96
November	12	32	44	88
December	11	32	42	87
January	12	30	52	94
February	11	36	32	79
March	11	36	12	59
AVERAGE	13	34	45	92
%	14%	37%	49%	100%
% OF POPULATION	1%	2%	2%	5%

*SOURCE: Government of Manitoba, Department of Health & Social Development.

CROSS LAKE

FAMILY ALLOWANCE CALCULATIONS

Rates in Force:

1. April 1972 to October 1973:

Birth to 10 years	$ 6/month/child
10 to 16 years	$ 8/month/child
16 to 18 years	$10/month/child

2. October 1973 to December 1973:

Birth to 18 years	$12/month/child

3. January 1974 to Present:

Birth to 18 years	$20/month/child

Cross Lake Population: 0-18 Years

0 - 10 years	720
10 - 16 years	280
16 - 18 years	144
Total	1,144

Family Allowance Payments:

1. 1972/73 Rates:

0 - 10 years 720 x $6 x 12 = $51,840

10 - 16 years	280	x $ 8 x 12 =	$26,880
16 - 18 years	144	x $10 x 12 =	$17,280
Total	1,144		$96,000

2. Present Rate:

1,144 x $20 x 12 = $274,560

CROSS LAKE

OLD AGE PENSION CALCULATIONS - 1972/73

Security Payments (65 yrs. +):

1. Present (April 1974	$110.09
2. April 1973	$100.00
3. April 1972	$ 82.88

Supplement Payments (65 yrs. +):

1. Present:

$77.22/person	(Single)
$68.58/person	(Married)

2. April 1973:

$70.14/person	(Single)
$62.30/person	(Married)

3. April 1972:

$67.12/person	(Single)
$59.62/person	(Married)

Rates Used:

April 1972	$145/person/month
Present	$183/person/month

Population over 65 years:

65 - 69	20
70+	40
Total	60

Old Age Payments:

60 x $145 x 12	$104,400

At present rate:

60 x $183 x 12	$131,760

APPENDIX 5

STUDIES CONCERNING AN ALL WEATHER ROAD TO CROSS LAKE

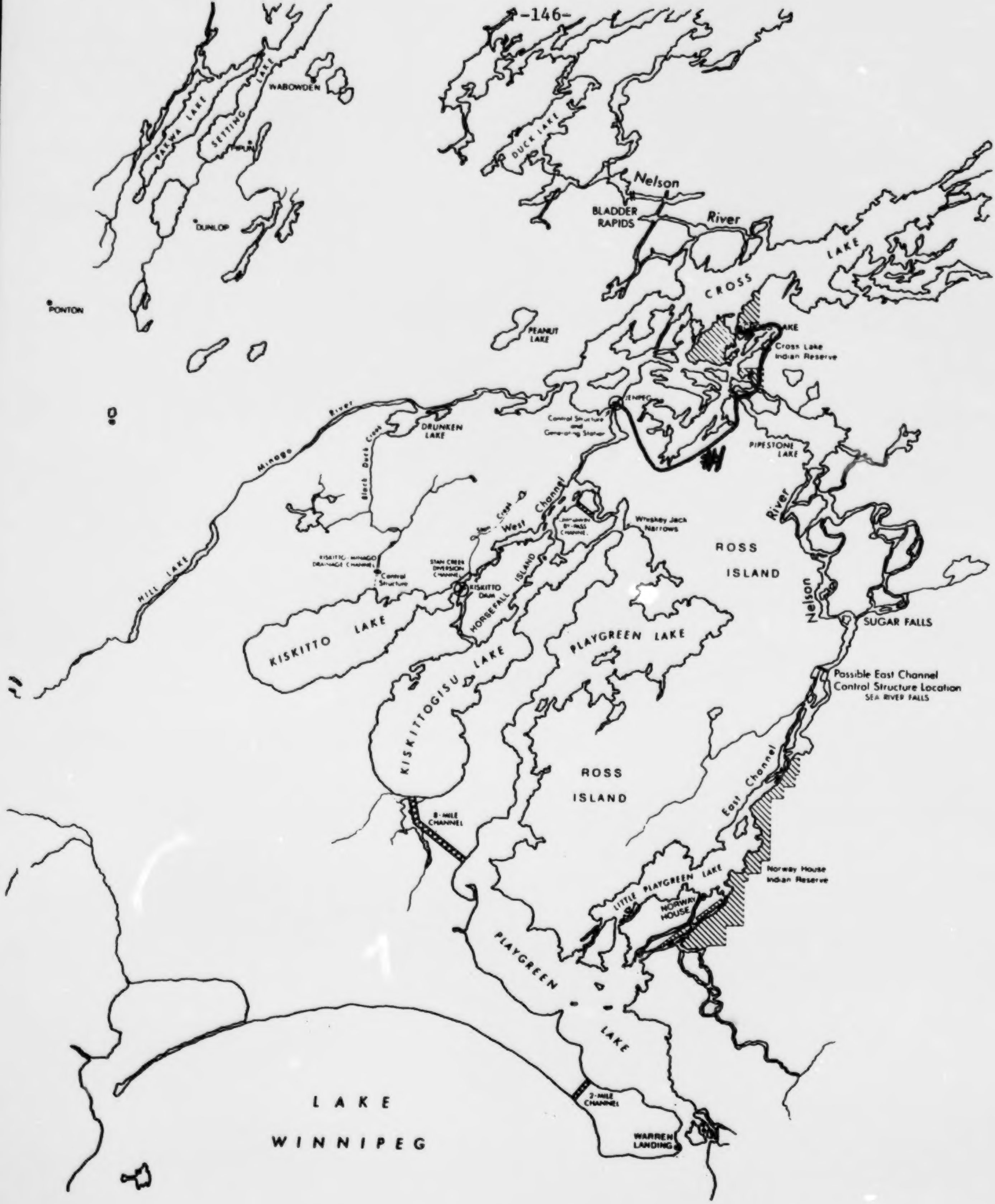
One of the major, potential areas of impact which has been identified in the Cross Lake region is transportation. This appendix summarizes the information collected to date on the problem.

Past external transportation systems in this area have been well documented in the following reports:

1. Cross Lake Transportation Study, M.M. Dillon Ltd., Consulting Engineers and Planners, 1971.
2. Outlet Lakes Transportation and Navigation Study, Lake Winnipeg, Churchill & Nelson Rivers Study Board, January 1973.
3. Interim Report on Winter Transportation in Outlet Lakes Area, Manitoba Hydro, August 1973.
4. Water Level Study for Cross Lake Community, Cross Lake, Manitoba, M.M. Dillon Ltd., for I.N.A., January 1974.
5. Cross Lake: Alternative Road Locations, Underwood-McLelland Ltd., September 1973.
6. Proposal for Construction of an All Weather Road From: (a) Jenpeg to Cross Lake, (b) Jenpeg to Norway House, Don McIvor, April 1973.

Numerous routes are outlined in these reports but the alternative which appears to have the most support in the community is Route #1 from Jenpeg across Ross Island, over the East Channel and entering the community from the east side (see following map). Costs of construction in this area will likely be between $60,000 to $100,000 per mile with three bridges at approximately $400,000 to $500,000 each. Estimated total cost would range between $2.6 million and $3.9 million. Benefits will accrue from a reduction in transportation costs to local residents and, most importantly, the provision of an inexpensive and convenient mechanism for local residents to move in and out of Cross Lake for economic (employment) and social purposes. The magnitude of these benefits is not yet known.

It should be noted that under the Western Northlands Agreement provision has been made for alternate route studies to be carried out over the coming year. The results of these studies could have a major effect on any final decision.


TAKWA LAKE
SETTING LAKE
WABOWDEN
DUNLOP
PONTON
DUCK LAKE
Nelson
River
BLADDER RAPIDS
CROSS LAKE
PEANUT LAKE
Cross Lake Indian Reserve
JENPEG
Control Structure and Generating Station
Minago River
DRUNKEN LAKE
Black Duck Creek
PIPESTONE LAKE
West Channel
Stan Creek
BY-PASS CHANNEL
Whiskey Jack Narrows
ROSS ISLAND
KISKITTO-MINAGO DRAINAGE CHANNEL
Control Structure
STAN CREEK DIVERSION CHANNEL
KISKITTO DAM
HORSEFALL ISLAND
HILL LAKE
KISKITTO LAKE
PLAYGREEN LAKE
Nelson River
SUGAR FALLS
Possible East Channel Control Structure Location
SEA RIVER FALLS
KISKITTOGISU LAKE
ROSS ISLAND
8-MILE CHANNEL
East Channel
Norway House Indian Reserve
LITTLE PLAYGREEN LAKE
NORWAY HOUSE
PLAYGREEN LAKE
2-MILE CHANNEL
WARREN LANDING
LAKE WINNIPEG

——— Preferred Route

THE OUTLET LAKES

APPENDIX 8 - VOL. 2 - B

NELSON HOUSE COMMUNITY PROFILE

NELSON HOUSE COMMUNITY PROFILE

by

J. D. COLLINSON, et al
The Social and Economic Impact Study Team
Planning Branch
Manitoba Department of Mines, Resources and Environmental Management
Winnipeg, Manitoba
June, 1974

for

THE LAKE WINNIPEG, CHURCHILL AND NELSON RIVERS STUDY BOARD

SPECIAL NOTE

THE CONCLUSIONS AND RECOMMENDATIONS CONTAINED IN THIS APPENDIX ARE THOSE OF THE AUTHOR(S) AND ARE NOT NECESSARILY THE SAME AS THE CONCLUSIONS AND RECOMMENDATIONS OF THE LAKE WINNIPEG, CHURCHILL AND NELSON RIVERS STUDY BOARD AS EXPRESSED IN THE SUMMARY REPORT AND THE TECHNICAL REPORT.

PREFACE

This paper is one of a series of technical reports prepared or initiated by the Social and Economic Impact Study Team as background to a report entitled Social and Economic Impact Study of the Lake Winnipeg, Churchill-Nelson Rivers Hydro Development.

The purpose of the impact study is to identify the potential social and economic impacts of hydroelectric power projects on remote northern Manitoba communities, and to recommend mitigation and development measures.

An examination of the social and economic characteristics of each community within the study area, provided a baseline against which to formulate conclusions and recommendations. A brief summary of these community profiles appears in the general report. The Paper "Nelson House Community Profiles" provides a more detailed account of the information and data upon which are based the conclusions and recommendations pertaining to the community of Nelson House.

J. D. Collinson,
Assistant Deputy Minister,
Department of Mines, Resources
and Environmental Management.

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I. BACKGROUND

A. Location

The community of Nelson House is located in the Footprint River Basin on Footprint Lake, north of Threepoint Lake, 40 air miles west of Thompson, Manitoba. The drainage basin is part of the Rat-Burntwood and Nelson River systems and covers a total area of 512 sq. miles. The population of Nelson House (approximately 1,260) is concentrated in three areas; Poplar Point, Mission Point and Dog Point, extending over a 4 mile area. (See Figures 1 and 2).

B. Geology

The area bordering Footprint Lake at Nelson House was established mainly by depressions in the Precambrian bedrock. In some places, wave action has exposed the bedrock which rises steeply from the water. The bedrock is often covered with substantial thickness of silty-clays and clayey-silts of glacio-lacustrine origin, to form banks that rise 40 to 100 feet or more above the present lake elevation of about 783' above sea level (ASL).

The Rat River draining the west side of the district and the Burntwood River system through the south part of the area are lined with creeks and small rivers draining into the main waterways from numerous muskeg potholes and swamp areas.

The Footprint River drains the central areas into the Burntwood River. Most of the lakes formed on these waterways are shallow water lakes. In the east and northeast parts of the section, jackpine ridges, rock formation and hilly country prevail.

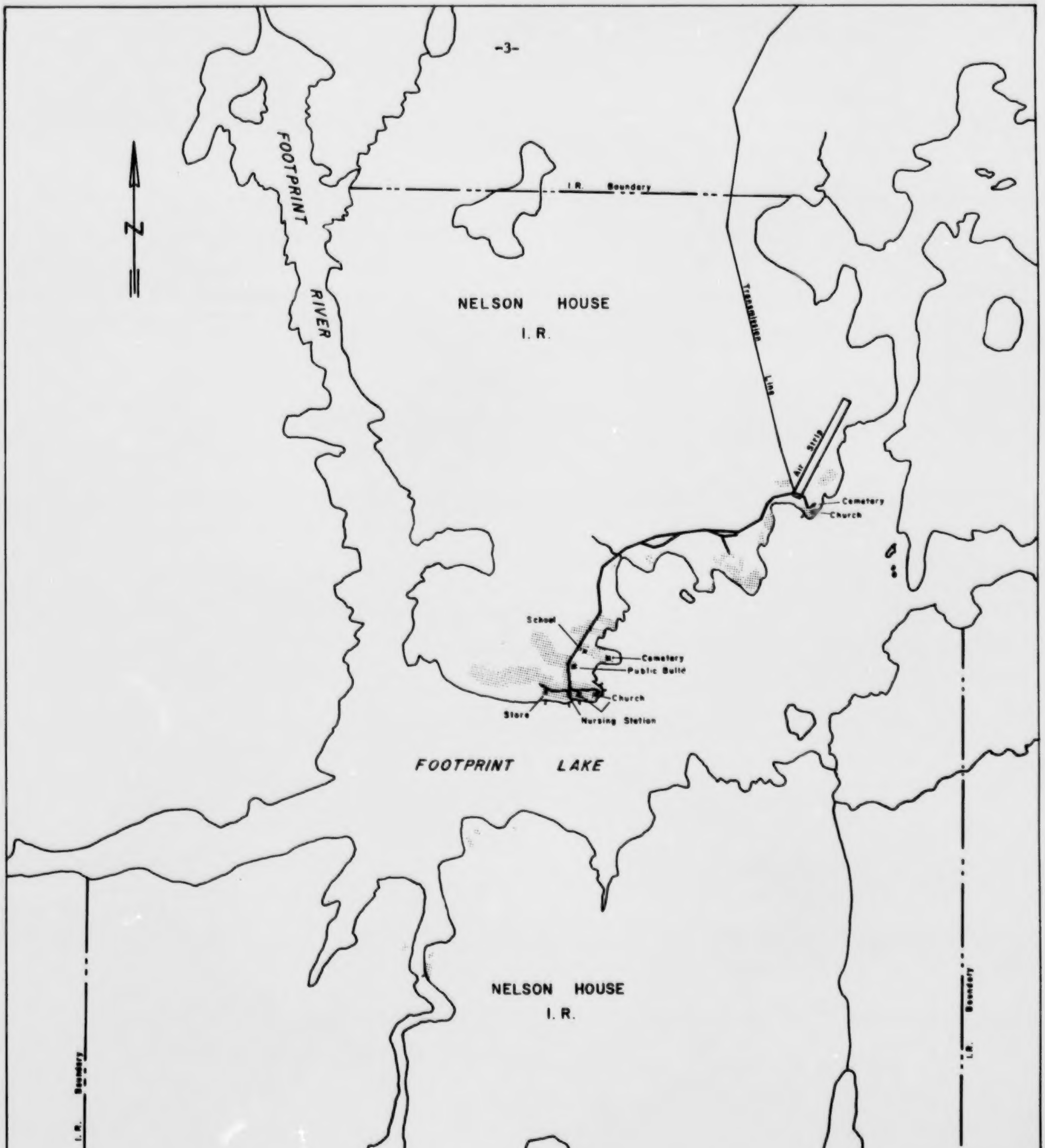
N
FOOTPRINT RIVER
I.R. Boundary
NELSON HOUSE I.R.
Transmission Line
Air Strip
Cemetery
Church
School
Cemetery
Public Bldg
Church
Store
Nursing Station
FOOTPRINT LAKE
NELSON HOUSE I.R.
I.R. Boundary
I.R. Boundary
I.R. Boundary
THREEPOINT LAKE 214
NELSON HOUSE
represents settled area
Scale: I inch = 3300 feet approx.

Figure 1

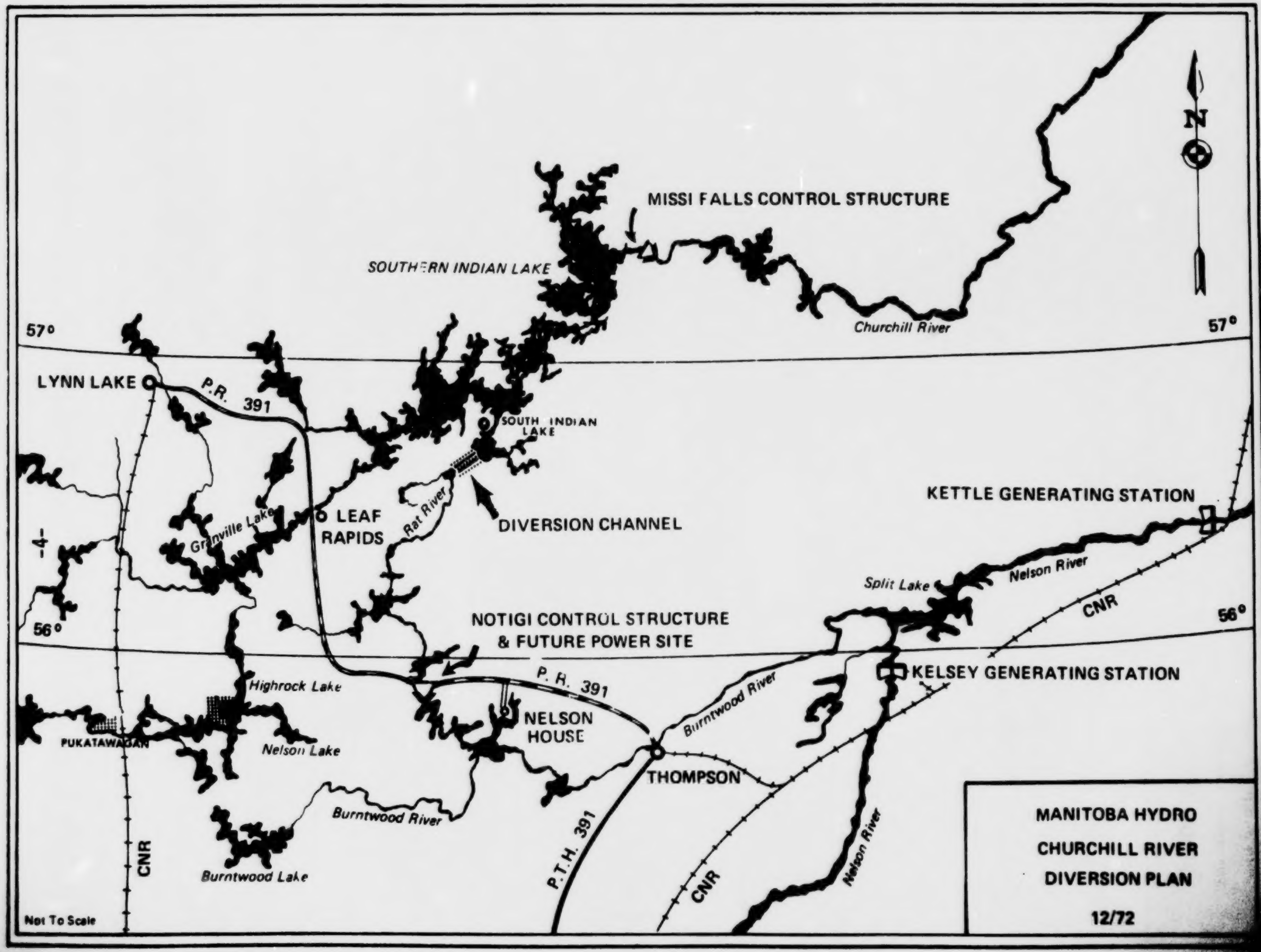
MISSI FALLS CONTROL STRUCTURE
SOUTHERN INDIAN LAKE
Churchill River
57°
57°
LYNN LAKE
P.R. 391
SOUTH INDIAN LAKE
Granville Lake
LEAF RAPIDS
Rat River
DIVERSION CHANNEL
KETTLE GENERATING STATION
Split Lake
Nelson River
CNR
56°
56°
NOTIGI CONTROL STRUCTURE & FUTURE POWER SITE
Highrock Lake
P.R. 391
KELSEY GENERATING STATION
Burntwood River
PUKATAWAGAN
Nelson Lake
NELSON HOUSE
THOMPSON
Burntwood River
Burntwood Lake
CNR
P.T.H. 391
CNR
Nelson River
MANITOBA HYDRO
CHURCHILL RIVER
DIVERSION PLAN
12/72
Not To Scale
N

Figure 2

II. THE CHURCHILL RIVER DIVERSION PROJECT

In order to generate additional hydroelectric power, Manitoba Hydro has been issued a licence to divert not more than 30,000 cubic feet per second of water from the Churchill River at Southern Indian Lake into the Nelson River via the Rat-Burntwood River system.

Under the terms of the licence, a minimum of 500 cubic feet per second (cfs) during open water and 1,500 cfs during the ice cover period must be released down the Lower Churchill River from a control structure being developed at Missi Falls. Southern Indian Lake will be raised to elevation 847 feet above sea level (ASL) with a maximum permissible level of 850 feet ASL. Once Southern Indian Lake is being utilized as a reservoir, the maximum drawdown or fluctuation permitted in any 12-month period will be 2 feet.

The diverted water will flow into the Rat-Burntwood River system via an excavated channel connecting Southern Indian Lake to Issett Lake. From its origin at Issett Lake the Rat River flows south through Karasakawigamak, Pemichigamau, Rat, Notigi and Wapisu Lakes, into Threepoint Lake where it joins the Burntwood River. From Threepoint Lake, the water flows northeasterly along the Burntwood River to the Nelson River.

Figure 3 below illustrates the diversion route and identifies the most significant components of the project in terms of the impact on Nelson House.

DIVERSION ROUTE

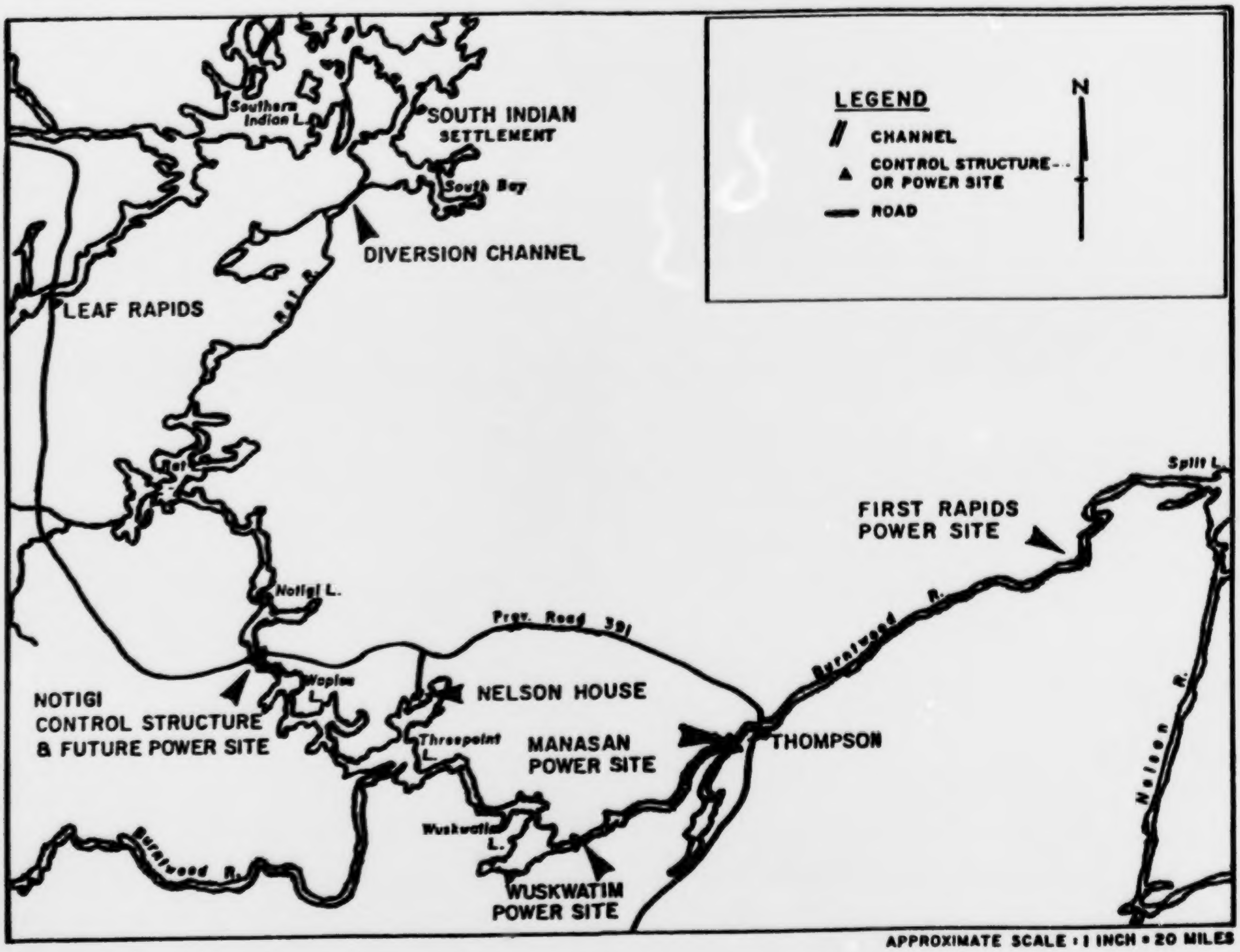
Southern Indian L.
SOUTH INDIAN SETTLEMENT
South Bay
DIVERSION CHANNEL
LEAF RAPIDS
Rat R.
Rat
Notigi L.
Prov. Road 391
NOTIGI CONTROL STRUCTURE & FUTURE POWER SITE
Wapisu L.
NELSON HOUSE
Threepoint L.
MANASAN POWER SITE
THOMPSON
Burntwood R.
Wuskwatim L.
WUSKWATIM POWER SITE
FIRST RAPIDS POWER SITE
Split L.
Burntwood R.
Nelson R.
LEGEND
CHANNEL
CONTROL STRUCTURE OR POWER SITE
ROAD
N
APPROXIMATE SCALE : 1 INCH = 20 MILES

Figure 3

A. Project Description

1. Missi Falls Control Structure

This structure will control the outflow from Southern Indian Lake and is being built at Missi Falls at the extreme eastern end of Southern Indian Lake. With the completion of the control structure, scheduled for June, 1975, Manitoba Hydro proposes to close the gates and raise the level of Southern Indian Lake to a maximum elevation of 847 feet ASL (historic maximum elevation has been computed to be 842.81 feet ASL).

2. South Bay Diversion Channel

South Bay is a body of water on the southeast corner of Southern Indian Lake. The diversion channel will connect South Bay to Issett Lake and will have a discharge capacity of 30,000 cfs.

3. Notigi Control Structure

The cofferdam below Notigi Lake, northwest of Nelson House was completed in May, 1974, prior to scheduled dates for both the Missi structure and the South Bay Channel. The flow of the Rat River, approximately 1,200 cfs has been closed off at Notigi to allow the levels in the Rat-Notigi reservoir to approach the level in Southern Indian Lake, approximately 840 feet ASL. In November, 1975, the gates of the Notigi structure will be opened to allow the water, augmented by approximately 30,000 cfs from Southern Indian Lake, to flow through Wapisu and Threepoint Lakes into the Burntwood River (See Figures 3 and 4).

The community of Nelson House is situated north of the actual diversion route. However, it will be directly affected if changes in the water regime on Threepoint Lake result in increased levels on Footprint Lake.

In order to assess the character and extent of such impacts, it is necessary to have a clear understanding of:

i) the components of the development project which relate to the community, and

ii) the changes in the water regime that are expected to occur as a result of the project.

BURNTWOOD RIVER
ULTIMATE PROFILE

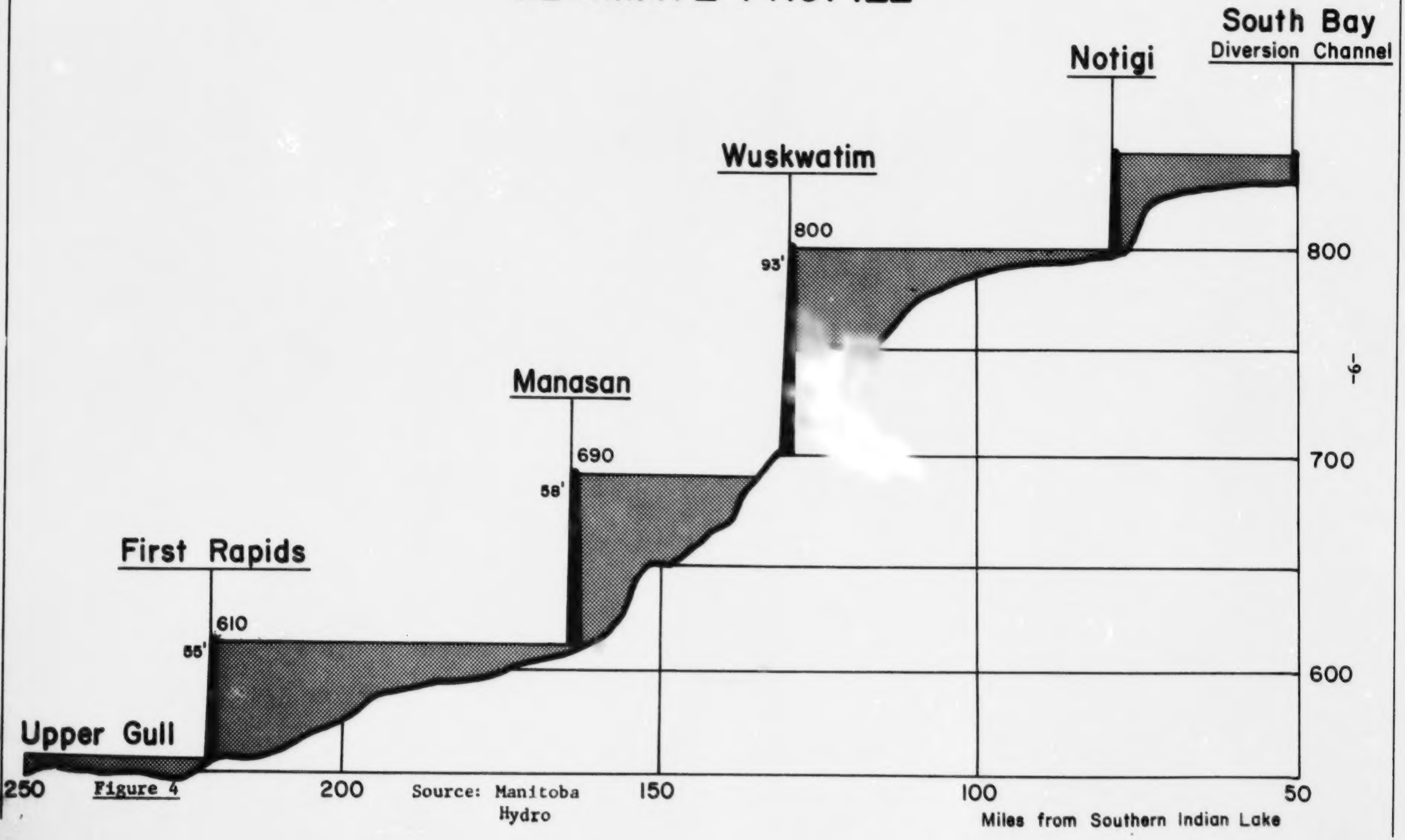

Figure 4

Source: Manitoba Hydro

B. Water Regime

1. The Unregulated Condition

a) Levels

There is a lack of data concerning Footprint Lake which leads to difficulties in establishing the nature of the present water regime. Simulation data provided by Water Resources Branch for the vicinity of Nelson House are presented below.[1]

It is apparent that the unregulated levels are generally higher in summer than in winter and that the range of fluctuation is substantial.

Table 1

MEAN MONTHLY WATER LEVELS, NELSON HOUSE*

Estimated Unregulated	Open Water (Feet ASL)	Ice Cover (Feet ASL)
Minimum	777	776
Average	784	780
Maximum	790	784
Range	13 feet	8 feet

*Source: Water Resources Branch

---

[1] The period of record for this data is 1928 to 1966. All figures are expressed as mean monthly elevations.

b) Flows[1]

Natural flows on the Footprint River near the community have averaged at approximately 300 to 400 cfs over an annual period. In the Rat River, flows have averaged 1,200 cfs while the average annual flow of the Burntwood River has been about 1,500 cfs.

2. The Regulated Condition

a) Levels

Under regulation, water levels at Nelson House will increase substantially. Table 2 outlines the anticipated new conditions, assuming three development possibilities. The first case, no Wuskwatim development, is likely to prevail until at least the mid-1980's. In this case, levels will be more stable than under unregulated conditions, but substantially higher. Further, there is a slight possibility that severe ice jam conditions could develop during the winter, resulting in water levels as high as 818 to 820 feet ASL. Under the other two cases, summer water levels are expected to be higher while winter levels will generally remain the same as in Case #1. However, ice jam conditions are not expected to occur with the Wuskwatim development. In addition, the levels under regulation will be higher in winter than in summer, the reverse of seasonal fluctuations in the unregulated condition.

---

[1] Manitoba Water Resources Branch

Table 2

ESTIMATED AVERAGE REGULATED WATER LEVELS, NELSON HOUSE*

Development Alternatives	Open Water (Feet ASL)	Ice Cover (Feet ASL)
Without Wuskwatim	798	810-812
With Wuskwatim (Forebay 800')	803	810-812
With Wuskwatim (Forebay 810')	811	810-812

*Source: Manitoba Hydro

b) Flows

Flows under regulation are expected to remain stable at an average of 30,000 cfs on the Burntwood River. This is a dramatic increase compared with the unregulated condition. No data are available for the immediate vicinity of the community but indications are that flows will not increase sufficiently to disrupt ice formation or open water transportation around the community.[1]

3. The Footprint Dam

A proposal has been made to construct a dam between Footprint and Threepoint Lakes, and to install facilities for pumping the outflow from Footprint River over the dam. This development would maintain levels at the average unregulated elevation. The possibility of including this structure in Manitoba Hydro's development project is still under discussion with the community.

---

[1] Personal communications with Manitoba Hydro and Provincial Government field staff.

III. HISTORY OF NELSON HOUSE COMMUNITY

A. INTRODUCTION

Since the Indian migration out of Asia some 40,000 years ago, most Indian populations have been mobile, since their livelihood was dependent on hunting and fishing. This took the hunter-fishermen into areas of seasonal abundance where he developed the skills and technology required to meet the demands for the survival of his family and himself.

In the early stages of development, family groups were entirely self-sufficient. Everything required for daily subsistence was gathered or harvested through the direct efforts of family members. Thus the people developed a nomadic way of life which evolved from the constant search for food, clothing and shelter, and which revolved around the resources provided by the rivers and forests.

For this reason most Indian settlements had their beginnings as temporary hunting or fishing camps. Only after the initial contact with the white man's culture and the money economy was there a trend towards establishing permanent communities. As free traders or trading companies pushed inland from Hudson Bay, natives required a permanent location where such transactions could take place. As a result, the temporary camps gradually became meeting places, trading posts, and eventually, communities.

With the transition from a nomadic society to a permanent community, the basic unit of social organization changed from the family, to the band, and, ultimately, to the community. This was accompanied by new organizational demands on the people. A nomadic people, based on the family unit, has no need to develop systems to deal with such functions as community decision-making, socialization, social control, etc. On the other hand the community, "a combination of social units and systems which perform the major social functions of locality relevance,"[1] is under constant pressure, not only to devise systems to perform community functions, but also to make such revisions as are necessary to keep pace with changing conditions.

---

[1] Warren, Roland L., The Community in America, Rand McNally & Co.: Chicago, 1963, p. 9.

B. NELSON HOUSE

The Community of Nelson House followed the general line of development outlined above.

1. Pre-Settlement

In the late 1500's, northern Manitoba was the home of roving bands of Chipewyan Indians performing within the cultural parameters that provided the essentials for survival. About the time the Hudson Bay Company appeared on the shores of Hudson Bay, the Swampy Cree nation had started its expansion towards the northwest.

> "The Crees were first contacted by a party from the Fort at the mouth of the Nelson and Hayes River in 1682. The Party must have travelled about one hundred miles inland before establishing contact. It was obvious that the Cree had preferred being inland, spending some time on the coast."[1]

---

[1] Morton, W. L., Manitoba. A History, Toronto, 1957, p. 13.

After the acquisition of fire arms, the Crees pressed forward in their expansion. However, small pox epidemics in the 1780's decimated both the Cree and Chipewyan nations.

> "The situation in this area was a fluid one. The Chipewyans had been moved north from the Nelson River-Churchill River portion of the coast. The Churchill River was, in general, the southern edge of the Chipewyan area before small pox wiped out an estimated nine-tenths of this group in 1781. At this time, the Cree seemed to have moved northward across the Churchill River in inland parts of present Manitoba and Saskatchewan."[1]

In the early 1800's, roving Cree bands from the Southern Indian Lake area moved into the Nelson and Burntwood River areas. Here they established summer camps in the vicinity of trading posts operated by the Hudson's Bay Company.

The Hudson's Bay Company maintained a temporary outpost known as Nelson River during the trading season of 1820-21.

---

[1] Hlady, Wm., Indian Migration in Manitoba and the West, 1964. p. 415.

Another temporary post was established at Threepoint Lake in 1823. However, it was not until 1833 that a permanent post was established at the present site of Nelson House. This marked the birth of the community of Nelson House. The post was initially known as Fort Seaborn, later referred to as the Nelson River post, and in 1866, received its present name.

2. 1836 - 1897

The founding of the permanent settlement ushered in a period of gradual change. This period was characterized by new contact with the world outside and by the introduction and growth of the money economy. These initial experiences were to have dramatic and lasting effects on the lifestyle of the people.

In the early stages of development, the life of the people of Nelson House consisted of fishing and hunting along the river routes, and trading with the Hudson's Bay Company.

One of the earliest influences in the lives of the people was provided by the Church. As early as 1840, Reverend James Evans, a Methodist Minister from Norway House, visited the community. This was followed by periodic visits from other Church representatives. In 1895, Reverend Samuel Gaudin and his wife Anna built the first permanent church in Nelson House. Besides providing the religious influence, the Gaudin's tended to the medical needs of the people, taught school, and became deeply involved in every aspect of community life.

From an economic point of view, the major influences consisted of commercial activities along the waterways, and the presence of the Hudson Bay Company.

Despite limited transportation facilities, a good deal of commercial activity began to develop along the river routes.

Freight came down Lake Winnipeg from Selkirk and Winnipeg, two trips a year, to Warren's Landing. Individuals worked for their passage and provided their own rations. York boats, barges, sloops and canoes which plied the northern waterways carried furs to Warren's Landing where they were exchanged for supplies from the south. These were often stored in the Hudson's Bay Company warehouse from where they were later reloaded into north-bound York Boats. In addition to furs, southbound cargoes included lumber from the sawmills around Lake Winnipeg, fish, and moose hair for stuffing horse collars.

Twenty-five tons of freight for the fur trade left Norway House for Nelson House each summer in two brigades. The cost of transporting the freight was $6 per hundred weight. Flour sold for $20 a barrel and a canoe man was paid $1 per day to paddle his birch bark canoe 50 miles a day. As many as 32 Nelson House Indians were employed in one such brigade and injuries resulting from accidents, lung hemorrhages, hernias and rheumatism were common. Plying the river routes were brigades from Churchill which travelled via Southern Indian Lake, Rat River and Nelson House, passing others returning to Nelson House down the Nelson River to Split Lake and up the Burntwood River.

These activities provided various opportunities for employment.

The Hudson's Bay Company had native people in its employ as guides, trappers, fishermen and boatmen; thus many native people were involved in the wage economy.

The post manager paid $1.15 per cord for fuel wood and a man could cut up to 18 cords per week. Others built canoes (valued at $15 in trade), and put up fish for the winter. Often the Bay advanced supplies in the fall for next spring's catch. This was usually $115 per trapper or one-half of the value of his catch. Women trappers were given the same opportunity. The Bay had a policy of extending courtesy, ammunition, tea and tobacco to diseased or crippled hunters; in Nelson House this policy was further extended to a widow's daily ration of fresh fish. "Destitute rations" did not appear for many years. As a result of malnutrition and starvation many hunters and trappers were unable to clear their indebtedness to the company.

During this period too, free traders pushed inland, using Indian guides and interpreters. The trader relied upon the natives to draw maps and to instruct him in the use of snowshoes. toboggans and birch bark canoes. More significantly, members of the community gradually developed a dependency upon the trader. In the subsistence stage, the people carried on their traditional pursuits in such a way as to satisfy their own needs and there was little need for contact with the outside world. Any decisions which were required were made by family heads or by a few influential patriarchs. As the people began to rely on purchased goods and outside markets for fur, they could no longer maintain this self-suffiency. As a result, they turned to the trader, who in most cases, was their only contact with the outside. He provided councilling; he referred people with particular concerns to appropriate agencies; he wrote letters and completed forms; and he provided liaison between residents and government agencies. Thus, the trader became a powerful influence in the decision-making of the community.

Although as many as 500 Indians were camped during the summer at Nelson House, the number would drop to 40 during the winter. The people suffered many hardships. There was a small pox epidemic in 1870, a measles epidemic in 1895, and a constant struggle with poverty and starvation. In 1875, Reverend Semmens found bigamy and the cruel treatment of women a common occurrence.[1]

The impact of these initial contacts with the white man's culture was widespread. As shown above, the Church and the trader played an important role in community leadership and decision-making. In addition, the availability of both money and consumer goods produced various changes in lifestyle. As new tools and implements appeared, many of the traditional techniques were abandoned. European clothing became increasingly common. As time went by, the Indian people acquired an appreciation for purchased foods, cooking utensils, household furniture, etc. In short, spending patterns reflected the advent of the money economy.

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[1] Shipley, Nan, Anna and the Indians, Ryerson Press, Toronto, 1966, p. 4.

3. 1897 - 1940

After 1897, there were numerous developments which had a significant impact on the lifestyle of the people, particularly in the area of education, medical services and local administration.

Prior to the signing of the Nelson House Treaty in 1908, there was no formal provision for the education of native children. Reverend Gaudin first taught school in the Church. In 1897, a school was built and a teacher brought in from Edmonton, Alberta.

Treaty children were eligible for attendance at Residential schools in other parts of the Province. However, there was no such provision for the children of Metis residents. This policy of different facilities for Treaty and non-Treaty residents was to result in a tragic experience. A group of non-Treaty children who had been sent to the Brandon Residential School were ineligible for enrolment. They were thus transferred to a school in Alberta, where a number of them died. This situation repeated itself at Norway House in 1906 at the newly build Residential School. In this case, eight children were to attend, only three stayed, and two of these died. The other 5 were taken home by their parents. It was evident that the children suffered from melancholia as well as "White mans" diseases such as diptheria. Thus, at the turn of the 20th Century the community was struggling to acquire the benefits offered by the outside world.

A significant milestone in the history of the community was the building of the Norway House Hospital since Nelson House patients no longer had to be sent to Winnipeg for treatment. It was staffed by a doctor and a nurse and as the people took advantage of the availability of regular medical treatment, the status of the "medicine man" deteriorated. The fact that he was now employed on the brigades is evidence of his diminishing effectiveness in his traditional role.

There were other signs that the people were becoming less self-sufficient. For example, starving residents moved out of the bush into the community where they could depend upon assistance in the form of food and clothing.

Another historic event in this period was the signing of the Treaty in 1908, when the Nelson House Band was officially recorded and the reserve boundary described. As in other communities, this separated Indian from Metis and placed the Treaty Indian under the paternalistic supervision of the federal government. The Treaty provided for farm land, Treaty payment, a school on the reserve, and an annual salary to the Chief and his Councillors of $25.00 per year and downwards. The Government restricted liquor on the reserve, and maintained the right to administer and sell reserve land. The Indians gave up all rights, titles and privileges to the land in northern Manitoba and Ontario but were allowed to continue the pursuit of hunting and fishing.

Within a few years a new Indian Affairs School replaced the Mission School. Since there were too few non-Treaty families to support a provincial school, these students continued to attend various residential schools in the Province. The residential schools were under Church control and followed the Provincial curriculum.

These developments had two disturbing effects:

a) They created a rift between the larger Indian segment and the small group of Metis living in the community. The Metis were neither regarded as Indians nor accepted as whites. Although the education of Indian children was a matter of concern to the Federal government, the education of non-Treaty children was a Provincial responsibility.

b) The educational system disrupted family life. Admittance to the residential school was restricted to children of a particular faith, with the result that many families had mixed religious beliefs. In addition, regular school attendance would make it impossible for native people to trap and fish as a family unit, as they had done in the past. To the people concerned, the need for such measures was far from obvious. Their lifestyle involved trapping in the fall, winter and spring, fishing, gardening and berry picking in summer, and gathering firewood in August. Associated with this lifestyle was a heavy reliance on "country food." Since there was limited use of commercial products, there was little need for cash income. Thus, the formal education required to succeed in a wage economy was of little value to members of this "gathering society."

For these reasons, many families kept their children out of school for extended periods of time.

Changes in transportation continued to have an impact on the community. Talk of a Hudson Bay Railway to Churchill was heard as early as 1894 and its completion to Wabowden in the 1920's was just one of the influences transportation was to have on Nelson House. After 1929, air service from Channing and later Cold Lake was to lessen the community's independence and remoteness. Mail service brought in by train and aeroplane replaced the four times a year canoe and dog sled runs to Norway House. Freight was also hauled by horses in the winter to and from Wabowden. Commercial fisheries and pulpwood cutting were part of the free trader's efforts to create employment and help residents work off debts.

4. 1940 - 1965

In the next twenty-five years, rapid changes occurred in all parts of Canada. In particular, government, at both the federal and provincial levels, became concerned with the problems associated with northern development.

In the late 1940's, the Provincial Department of Education was established and a school inspection system inaugurated. In the north, the education of Metis and white children became a provincial responsibility. At Nelson House, non-Treaty children were enrolled in the Indian Affairs School and an arrangement was made for the provincial inspector to visit this school when he was in the area. In this period, too, a federal nursing station was built to attend to the medical needs of the people.

Since most Nelson House residents were Treaty Indians the presence of the Department of Indian Affairs played a major role in the development of the "reserve." The first permanent position of Assistant Agency representative was located at Nelson House. Earlier Indian Agents had appeared once a year at "treaty" time. In the 1940's the Indian Agent occupied an increasingly prominent position in the leadership structure of the community.

The main influence of the provincial government was through the Department of Mines and Resources. In the late 1940's a local game regulation office was established and the department set up the Registered Trapline system. The system provided protection to trappers but the main emphasis was on wildlife management.

Other significant changes which occurred during this period were in communication and transportation. Radio facilities were available through the Manitoba Department of Mines and

Resources. Later, radio-telephone services were made available by the provincial government.

Transportation developed rapidly following World War II. Aircraft provided increasing services. In addition to providing residents with an alternative means of transportation, the reliability of regular air flights allowed for the development of commercial fishing. The expansion and improvement of road transportation also had a significant impact. Horse trails and tractor trails were gradually replaced by a network of winter roads. This, in turn, enabled freight to be moved by large semi-trailer trucks.

As government services expanded, social programs replaced traditional methods of providing mutual support. Many of these helped to alleviate the hardships prevalent in remote northern communities. At the same time, they sometimes imposed changes in lifestyle which were difficult to accept. For example, medical services were provided in an effort to reduce infant mortality and tuberculosis. In time, the community came to depend upon the doctor or nurse for guidance. On the other hand, the need for mothers to bear their children in hospital and for tubercular patients to remain in sanitoriums for extended periods of time caused a painful separation of families.

The objective of the Church was to tend to all the needs of the people. In fulfilling this objective, Church leaders often adopted the role of teacher, nurse, doctor, radio operator, etc. In addition, the various church denominations competed for converts among the people. Thus, like the government, the Church fulfilled a major social function.
It too provided valuable assistance and guidance, but at the same time, imposed demands on the people to change their lifestyle.

Thus, the period was characterized by the increasing influence of external agencies.

5. 1960 to Present

In the 1960's, the province passed the Northern Affairs Act which allowed for a provincial Department of Northern Affairs. This department deals with such programs as municipal government, manpower, job training, and transportation (including a runway and road system). The activities of the department have accelerated the provision of transportation and other community services. In addition, the policy of the federal Department of Indian Affairs changed substantially during this period. The paternalistic approach was supplanted by an effort to give the Chief and Council a greater degree of autonomy in local decision-making, e.g., housing programs, social assistance programs, etc.

In terms of economic activity, ARDA programs were established in an effort to assist trappers to acquire adequate equipment. Additional funds were made available to assist trapper trainees during the unproductive period of apprenticeship.

The provincial government became involved in a federal-provincial cost-sharing program for fishermen training. Improved technology resulted in fewer but better equipped fishermen on the lakes.

Other programs included carpentry training by Indian Affairs and on-the-job upgrading programs by Canada Manpower.

The completion of the winter road to Thompson created a potential for increased employment and access to a wider variety of consumer goods. However, it does not appear that Nelson House residents took advantage of these opportunities. Later, the all-weather road to Thompson had a more significant impact on the community.

During the 1960's, Church leaders tried to maintain their involvement and influence in all aspects of community life. Despite these efforts, due to rapid development of government programs geared to the needs of the people, the influence of the Church was waning.

The accelerated rate at which such changes occurred has had the cumulative effect of:

a) moving the economy of the community towards integration with the larger provincial economy,

b) increasing community autonomy, and

c) placing severe stress on the community leadership and decision-making systems.

The current Churchill River Diversion Project has reinforced these trends.

IV. ECONOMIC AND SOCIAL STRUCTURES

Until the 1950's, Nelson House was a remote community with few ties to the provincial economy and cultures. The main contacts of community members were with residents of other remote communities in the surrounding area. Since all such residents depended upon harvesting the products of forests and rivers for their livelihood, the attitudes, values and activities which evolved were appropriate to the lifestyle of a "gathering society."

In recent years both the methods of earning a livelihood and the attitudes and values of residents have been undergoing a change. The expanding need for power, recreation, etc., has caused industrialized communities to encroach upon the land resources available to remote communities. In addition, younger native residents are reluctant to submit to the long hours and hard work associated with traditional pursuits, so long as alternative employment opportunities are available. As a result, the community of Nelson House has been moving away from a lifestyle dictated by the requirements of fishing, hunting, and trapping. It is expected that the hydro power project will accelerate the rate of change through its effect on both the physical resource base and the employment opportunities available to local residents.

The following analysis of current economic and social structures provides a baseline against which assessment of the impact of the project on the community of Nelson House can be made.

A. THE ECONOMY

1. Summary of Incomes

In 1972/73, the total income of Nelson House was approximately $1,280,000, while the average income per person in the labour force was $3,750. The community income is presented in two different but related ways - by economic activity and by type of economy. These are presented in absolute figures (See Table 3) and in percentages (See Table 4).

Three types of economies are identified -- the traditional economy, the wage economy, and the transfer payment economy. Economic activities include fishing, trapping, hunting, gathering fuel wood, hydro development, service industries, and the government sector. The three sub-economies and related activities are discussed in detail in Parts 3 to 5 below.

Table 3

SUMMARY OF INCOME DERIVED FROM ALL SOURCES - NELSON HOUSE, 1972/73*

	Traditional Economy				
Economic Activity	Cash	Income In Kind	Wage Economy	Transfer Payment Economy	Total
Fishing	$10,700	$ 46,100	$ –	$ –	$ 56,800
Trapping	17,600	29,900	–	–	47,500
Hunting	–	34,200	–	–	34,200
Fuel Wood	–	38,500	–	–	38,500
Hydro Development	–	–	470,000	–	470,000
Government					
Permanent	–	–	119,200	358,000	602,200
Temporary	–	–	125,000		
Service Industries	–	–	30,000	–	30,000
TOTAL	$28,300	$148,700	$744,200	$358,000	$1,279,200

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*For sources see detailed tables concerning each economic activity.

Table 4

PERCENTAGE OF INCOME DERIVED FROM ALL SOURCES - NELSON HOUSE, 1972/73*

Economic Activity	Traditional Economy		Wage Economy	Transfer Payment Economy	Total
	Cash	Income In Kind			
Fishing	1	4	-	-	5
Trapping	1	2.5	-	-	3.5
Hunting	-	2.5	-	-	2.5
Fuel Wood	-	3	-	-	3
Hydro Development	-	-	37	-	37
Government					
Permanent	-	-	9	28	47
Temporary	-	-	10		
Service Industries	-	-	2	-	2
TOTAL	2	12	58	28	100

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*For sources see detailed tables concerning each economic activity.

The economic activity of fishing provided $56,800 or 5% of community income, trapping $47,500 or 3.5%, hunting $34,200 or 2.5%, fuel wood $38,500 or 3%, hydro development $470,000 or 37%, service industries $30,000 or 2% and government $602,000 or 47%. Government activities are subdivided into wages - $244,000 or 19% and transfer payments $358,000 or 28%.

When community income is considered from the point of view of types of economies, the traditional economy accounts for $177,000 or only 14% of total community income, the wage economy generates $744,200 or 58%, and the transfer payment economy $358,000 or 28%. (See Tables 3 and 4.) The low percentage applicable to the traditional economy may be surprising to both residents and outside agencies, who tend to overestimate the importance of the traditional sector. This evidence of a marked trend towards modernization must be given consideration in any future development plans.

2. Labour Force

The population of Nelson House is approximately 1,260, consisting of 672 persons 16 years of age and younger, 541 persons between the ages of 16 and 65 and 47 persons 65 years of age or older.[1]

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[1] See Social and Economic Impact of the Nelson River Hydro Development (With Emphasis on South Indian Lake), Preliminary Report, June, 1973, pp. 131 f.f.

The labour force was estimated by determining the total number of males between the ages of 16 and 65 who are not attending school, and the number of single females between the ages of 16 and 24 who are not attending school. The resulting labour force estimate is 343, as shown in Table 5 below.

Table 5

LABOUR FORCE OF NELSON HOUSE, 1972/73

Age Group	Male	Female	Total
Under 20	46	38	84
20 - 40	153	28*	183
40 - 65	76	-**	76
TOTAL	275	66	343

*Ages 20 to 24 inclusive
**Not Included

Source: Canada, Department of Indian & Northern Affairs.
Manitoba, Department of Northern Affairs.

A significant characteristic of the labour force is the large percentage of unskilled workers and trappers. As indicated in Table 6, only 3-4% of the labour force falls into the professional or qualified tradesman category, and 12% to 15% in the semi-skilled category. Approximately 39% to 55% are engaged in trapping and/or fishing. Some of the trappers and fishermen may also work for wages. The remaining 35% to 44% are unskilled and do not fish or trap.[1]

Table 6

SKILLS INVENTORY - NELSON HOUSE, 1972/73

Labour Force	Number	Percent
Skilled	8-12	3-4
Semi-skilled	40-50	12-15
Unskilled	120-150	35-44
Fishermen	25-45	7-13
Trappers	115-145	32-42

The majority of the fishermen and trappers are in the 40-65 age group whereas the majority of those working for wages are in the 20-40 age group. For example, 70% of the trappers are over 45 (some are over 65 years of age). In addition, 60% of those in the 40-65 age group of the labour force speak little or no English, whereas nearly all of the labour force under 40 years of age are English speaking.[2]

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[1] Derived from Human Resources Survey, Department of Indian and Northern Affairs; the files of the Manitoba Department of Mines, Resources and Environmental Management and the Department of Northern Affairs.

[2] Ibid.

Generally, the mobility of the labour force decreases with an increase in age. As mentioned previously, 60% of the over 40 age group do not speak English and the majority are fishermen and/or trappers who do not possess adequate wage work skills. Those under 40 do speak English but most are unskilled. Because those under 40 do not have a language barrier, relocation is easier for them. However, only 18% of the men and 8% of the women over 14 have indicated that they would be willing to relocate. Ninety percent of those stating that they were willing to relocate were under 40 years of age. This data is tabulated below.

WILLINGNESS TO RELOCATE*

	Male	Female
Sample size	158	186
Total willing to relocate	29 (18%)	15 (8%)
Under 40 years of age	26	13

REASONS FOR RELOCATION*

	Male	Female
Permanent employment	20	10
Seasonal employment	3	2
Other	6	3
Total	29	15

* Source: Human Resources Survey, Department of Indian & Northern Affairs, 1972.

A number of workers have shown their willingness to travel outside of the community for varying periods of time to take construction jobs. There have been a number of placements of Nelson House workers by the Northern Manpower Corps in jobs at Kettle Rapids, Jenpeg, Notigi, Thompson and other centres. The turnover of these workers is high. One contractor stated that he employed an average of 20 Nelson House workers for a period of a year. He estimated that he sent out 100 T4 slips to Nelson House at the end of that period. On the average, 40-50 men have been employed outside of the community on construction jobs. The majority have worked for bush clearing contractors at the Notigi site. It is difficult to estimate the number of workers who will be willing to leave the community for seasonal work in the future, particularly if it involves travelling long distances from the community.

3. The Traditional Economy

Traditional economic activities, i.e., fishing, trapping, hunting and gathering wood for fuel, are sources of both cash income and income-in-kind. Of the $177,000 income generated by traditional activities in 1972/73, 16% was in the form of net cash income and 84% was in the form of income-in-kind. Income-in-kind, especially country food, is generally shared amongst all households in the community. The cash income was earned by 130 to 150 people -- approximately 29 fishermen and 127 trappers.[1] Some of the 29 fishermen are also trappers.

The traditional activities provide low dollar returns in relation to the number of participants as well as to the total community income. In 1973, trapping provided $44,000 gross or $17,600 net cash income to 127 trappers and fishing provided $11,000 gross or $7,730 net cash income to 33 commercial fishermen.

Traditional activities are seasonal. Commercial fishing occurs in the summer and fall while domestic fishing occurs mainly in the spring and fall. Relatively little domestic fishing takes place in the summer and winter. Commercial fishing has not taken place in the winter during the past five years.

Trapping generally takes place from freeze-up to Christmas and in the months of March and April. Trapping provides a source of cash from the sale of fur, and a source of food from beaver, muskrat, lynx and rabbits. Beaver provides approximately 50% of the cash income and 30% of the country food from trapping.

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[1] Derived from files of The Manitoba Department of Mines, Resources and Environmental Management.

Hunting takes place year round. Moose, waterfowl, grouse and ptarmigan are the predominant species hunted. According to the socio-economic team questionnaire, over 80% of the game is consumed in the spring and summer.

Firewood is used year round. It is estimated that 14 cords are used for cooking and heating in the winter and six cords are used in the remaining three seasons, mainly for cooking.

a. Trapping

Trapping accounts for approximately 3½% of the community income. Of this, 1% derives from the value of fur and 2½% from the value of the meat obtained from the trapline. For the six year period between 1967/68 to 1972/73, the average gross value of fur sold at the Winnipeg auctions was $60,000, and the estimated average net value was $24,040. The number of individuals who trapped during that period averaged 126. (See Table 7 and 8)

With the diversion of South Indian Lake into the Rat River, 26 traplines will be affected. (See Figure 5)

Fifty-five trappers are registered trapline holders. The average annual gross value of the fur produced on these traplines over the past six years is $33,850 and the net value is approximately $13,500. (See Table 9)

Table 7

VALUE OF FUR HARVEST & NUMBER OF LICENCES, NELSON HOUSE RESIDENTS*

Year	Gross Value	Estimated Net Value	Number of Trappers
1967/68	$ 63,400	$25,360	129
1968/69	105,600	42,240	145
1969/70	55,300	22,120	126
1970/71	43,800	17,520	114
1971/72	48,600	19,440	117
1972/73	44,000	17,600	127
AVERAGE	$ 60,100	$24,040	126

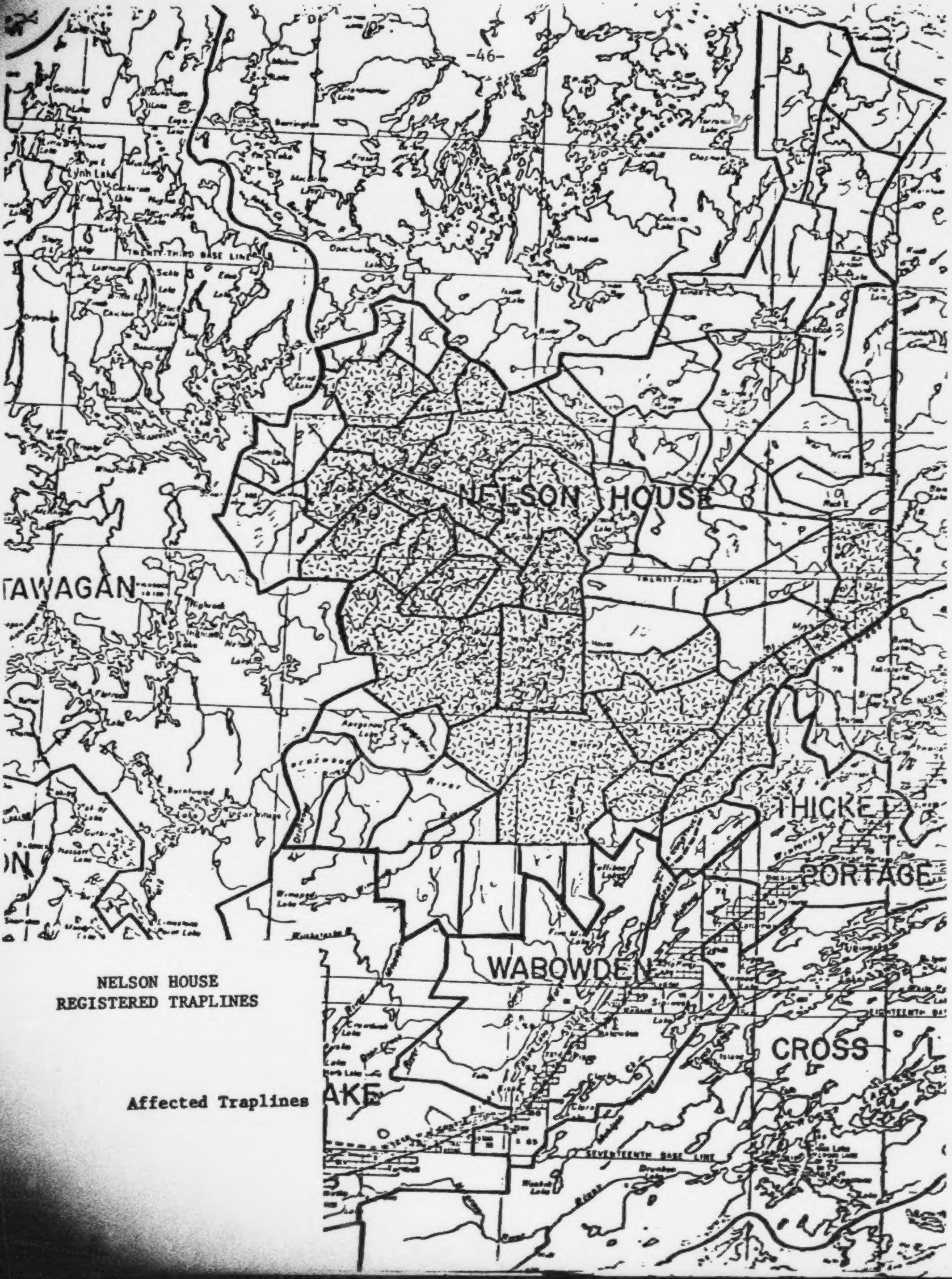
*Source: Manitoba Department of Mines, Resources and Environmental Management.

Table 8

VALUE OF FUR HARVEST BY SPECIE
NELSON HOUSE - 1967/68 - 1972/73*

Year	Beaver $	Muskrat $	Mink $	Lynx $	Other $	TOTAL $
1967-68 % of Total	37,782.00 60%	3,947.00 6%	8,216.00 13%	9,556.00 15%	3,637.00 6%	63,437.00
1968-69 % of Total	56,538.00 54%	5,011.00 5%	10,535.00 10%	30,125.00 29%	3,543.00 3%	105,627.00
1969-70 % of Total	28,731.00 52%	1,871.00 3%	4,446.00 8%	18,160.00 33%	1,638.00 3%	55,250.00
1970-71 % of Total	22,752.00 52%	2,525.00 6%	1,007.00 2%	15,320.00 35%	2,628.00 6%	43,756.00
1971-72 % of Total	22,122.00 46%	5,686.00 12%	2,299.00 5%	14,535.00 30%	3,959.00 8%	48,612.00
1972-73 % of Total	18,045.00 41%	1,742.00 4%	6,552.00 15%	11,719.00 27%	5,981.00 14%	44,040.00
AVERAGE	30,995.00 51%	3,463.00 6%	5,509.00 9%	16,569.00 28%	3,569.00 6%	60,120.00

*Figures may not compute exactly due to rounding off.
Source: Manitoba Department of Mines, Resources and Environmental Management.


NELSON HOUSE
TAWAGAN
THICKET PORTAGE
WABOWDEN
CROSS L
AKE
TWENTY-THIRD BASE LINE
TWENTY-FIRST BASE LINE
SEVENTEENTH BASE LINE
Lynn Lake

NELSON HOUSE
REGISTERED TRAPLINES

Affected Traplines

Table 9

COMPARISON OF TOTAL VALUE OF FUR HARVEST TO TOTAL VALUE ON TRAPLINES AFFECTED BY DIVERSION*

Year	Total Value	Total Value on Affected Lines	% of Total Value	Net Value on Affected Lines
1967/68	$ 63,400	$24,800	39%	$ 9,900
1968/69	105,600	62,700	59%	25,000
1969/70	55,300	32,900	59%	13,200
1970/71	43,800	23,000	52%	9,200
1971/72	48,000	34,300	70%	13,700
1972/73	44,000	25,400	57%	10,200
AVERAGE	$60,100	$33,850	56%	$13,500

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*Source: Manitoba Department of Mines, Resources and Environmental Management.

When the traplines are flooded, the trappers will be affected in a number of ways:

- fewer animals may be available because of diminishing habitat,[1]
- those trappers who are relocated to new trapping grounds will have to find "new fur." It will take one to two years for a trapper to have as thorough knowledge of his new trapping area as he did of his previous trapline, and
- new trails will have to be blazed by those trappers relocating to new traplines.

(i) Animals Available

For purposes of analysis, the potential production of the Nelson House registered trapline block is assumed to be the average harvest for a recorded historic peak production period. This potential was compared with the average number of pelts harvested during the past six years. The mean production of pelts harvested for these two periods and the difference between the potential and current harvests are shown in Table 10.

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[1] Wildlife Resource Impact Assessment, Preliminary Report, Lake Winnipeg, Churchill and Nelson Rivers Hydroelectric Projects, May, 1974.

Table 10

MEAN PRODUCTION OF PELTS AT NELSON HOUSE*

	NUMBER OF PELTS			
Period	Beaver	Muskrat	Mink	Lynx
Historic 1948/54 (Potential)	1,959	16,814	521	114
Current 1967/68	1,661	2,259	325	441
UNREALIZED POTENTIAL	298	14,555	196	(327)

*Source: Department of Mines, Resources and Environmental Management.

In the six year historical peak production period, 298 more beaver, 14,555 more muskrats, 196 more mink and 327 less lynx were trapped than in the six year current period.

As a result of the hydro project, 155 square miles (1 to 2 percent of the Nelson House trapping grounds) will be flooded.[1]

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[1] Wildlife Resource Impact Assessment, Lake Winnipeg, Churchill and Nelson Rivers Hydroelectric Projects, May, 1974.

However, the loss of potential harvest is not directly related to the loss of land area.

The Slaney Report[1] has analyzed, by species, potential loss resulting from the Notigi structure. The findings indicate the following:

a) Assuming a potential harvest of 0.5 beaver per square mile, the estimated potential loss of beaver harvest is 80. Actual harvest of beaver has ranged between 0.15 to 0.20 per square mile.

b) Flooding may result in the loss of potential habitat for 30 lynx, assuming densities of 0.2 per square mile. Actual harvest of lynx has ranged between 0.01 to 0.04 per square mile.

c) Mink will be seriously affected since this species is dependent on shorelines for cover and food supply. Approximately 71% of the mink harvest in the Nelson House trapline section is provided in the R.T.L.'s which will be affected by the diversion.

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[1] Ibid.

d) Flooding may result in a loss of potential harvest of 3,500 muskrats.

Table 11 below, compares these projected losses with the unrealized potential estimated in Table 10.

Table 11

SUMMARY OF EFFECTS OF DIVERSION ON FUR HARVEST

	Beaver	Muskrat	Mink	Lynx
Projected Loss	80	3,500	Serious*	30
Unrealized Potential	298	14,555	196	(327)

*Numerical estimate not available.

While projected losses may not appear to constrain future fur harvests, it must be recognized that because populations of animals fluctuate from year to year, the numbers available for harvest will vary. The populations will continue to fluctuate regardless of the diversion. In low production years the numbers available will be a constraint on the fur harvest while in years of high production, the numbers available will have no impact.

(ii) Re-Organization of Traplines

In meetings with the Department of Mines, Resources and Environmental Management personnel, Nelson House trappers have agreed to re-organize trapline boundaries so that the productive land available to each trapper is equalized. In this re-organization, a number of trappers whose lines are not directly affected by flooding will forfeit some of their trapline land to affected trappers. As a result of this re-organization, no trapper will be forced to discontinue trapping.

Those trappers who are relocated will have to devote a portion of their trapping time to searching for "new fur" and as a result will suffer a loss of income. Unless the trapper is compensated for this loss, he will suffer undue hardship during that period. Indeed, it may be unwise for him to trap at all if a reduced income for this period causes hardship to his family. It is suggested that Manitoba Hydro and the trappers reach a mutual agreement regarding compensation for losses incurred while searching for new fur.

(iii) New Trails

The Rat and Burntwood River systems have been used by trappers for access to their individual traplines. The unavailability of this traditional means of access will necessitate the blazing of new access routes.

a) New trails will have to be blazed on both sides of the diversion route.

b) Branches from the main trails to individual traplines will be needed.

c) New trails within the altered boundaries of individual areas may be also necessary.

Trapping provides a source of food as well as a source of cash derived from the sale of fur. Meat from muskrats, beaver, lynx and rabbit is consumed by trappers and their families.

The number of meals by season and value of the food obtained as a result of trapping are listed in Tables 12 and 13.

The impact of the diversion project on the country food derived from trapping is similar to the impact on trapping.

Table 12

COUNTRY FOOD DERIVED FROM TRAPPING - NUMBER OF MEALS BY SEASON*

	Spring	Summer	Fall	Winter	Annual
Muskrats	1,661	0	339	411	2,412
Beaver	309	0	139	1,404	1,852
Lynx	93	10	180	1,234	1,517
Rabbit	62	41	82	679	864
TOTAL	2,125	51	740	3,728	6,644

*Source: Data derived from the community survey conducted by the Social & Economic Impact Study Team.

Table 13

VALUE OF COUNTRY FOOD BY SEASON[1]

	Spring	Summer	Fall	Winter	Annual
Muskrats	$7,470	$ -	$1,525	$ 1,850	$10,850
Beaver	1,390	-	625	6,320	8,335
Lynx	420	45	810	5,550	6,820
Rabbit	280	185	370	3,055	3,890
TOTAL	$9,560	$230	$3,330	$16,775	$29,900

Source: Community survey conducted by the Social & Economic Impact Study Team.

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[1] The methodology utilized to estimate value of country food is outlined in Technical Report #5, Cross Lake Community Profile, Appendix 3.

The above analysis indicates that there will probably be substantial negative impacts on trapping in the Nelson House area from the viewpoint of both potential and actual production. Further, there is a need to re-organize traplines and provide new access trails to these areas.

Recommendations

1. THAT the opportunity to earn a livelihood by trapping be maintained. This implies an emphasis on mitigation (development programs)[1] rather than cash payments (compensation).

2. THAT Manitoba Hydro initiate discussions with Nelson House trappers or their representatives, regarding the following issues:

    a) Losses of income incurred by trappers who are relocated as a result of the diversion and must find "new fur."

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[1] The Wild Fur Development Program is outlined in Appendix 3.

b) Losses incurred and additional effort required by trappers who must cut new access trails within their trapping area.

c) The provision of new trails where traditional routes are disrupted by the diversion project.

b. Fishing

The Nelson House fishery provides 5% of the total community income. One percent is in the form of cash and 4% is in the form of income-in-kind.

During the past five years, an average of $16,900 gross income and $10,060 net was earned by Nelson House fishermen. (See Table 14)[1]

The gross and net income earned by fishermen who fished lakes affected by the hydro project during this period is shown in Table 15. (See Appendix 1 for further figures.)

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[1] Derived from files of the Manitoba Department of Mines, Resources and Environmental Management.

Table 14

COMMUNITY INCOME FROM COMMERCIAL FISHING & NUMBER OF FISHERMEN, NELSON HOUSE, 1969/73*

Year	Gross Income	Net Income	Number of Fishermen
1969	$23,850	$12,580	35
1970	26,180	14,830	46
1971	7,750	4,470	13
1972	16,160	10,680	29
1973	11,000	7,730	33
AVERAGE	$16,990	$10,060	31

*Source: Department of Mines, Resources and Environmental Management
Freshwater Fish Marketing Corporation.

Table 15

GROSS & NET INCOME OF FISHERMEN, FROM AFFECTED LAKES, NELSON HOUSE, 1969/73*

Year	Gross Income	Net Income	Number of Fishermen
1969	$8,910	$5,180	23
1970	6,120	2,750	19
1971	355	215	6
1972	-	-	-
1973	7,130	5,400	19
AVERAGE	$4,500	$2,710	17

*Source: Department of Mines, Resources and Environmental Management.
Freshwater Fish Marketing Corporation.

Those lakes which will be affected by the hydro project and which have been fished in the past five years include Wuskwatim, Rat, Mynarski and Wapisu Lakes. Of these, the only lake that is commercially viable and will be affected by the diversion is Wuskwatim. Net cash earnings from fishing this lake has been as high as $5,000 for a summer season. There is insufficient data upon which to assess the impact of the diversion on the earnings of fishing on this lake.

A fisheries report is currently being prepared by Environment Canada for the Lake Winnipeg, Churchill and Nelson Rivers Study Board. When this data becomes available a more accurate assessment can be made.

There is, in addition, the possibility that the diversion may result in improved fishing in areas that have not been fished in the past five years. An example is the Notigi Reservoir, where there could be a post-diversion increase in the fish population. However, in this case, floating debris may be a deterrent to commercial fishing in the near future.

A summary of earnings from lakes affected by the diversion is listed in Table 16.

Table 16

NET EARNINGS OF FISHERMEN FROM LAKES AFFECTED, NELSON HOUSE, 1969/73*

Year	Wuskwatim	Wapisu	Mynarski	Rat
1969	$4,570	$147	$18	455
1970	4,703	-	-	($1,955)**
1971	215	-	-	-
1972	-	-	-	-
1973	5,050	350	-	-

* Source: Manitoba Department of Mines, Resources and Environmental Management.
Freshwater Fish Marketing Corporation.

**Loss

Losses resulting from the hydro diversion could possibly be offset by exploiting unaffected areas more fully. There are a number of lakes fished by Nelson House residents which will not be affected by the diversion. The combined quotas on these lakes have not been harvested in any of the past five years. Unless activities increase, the fishermen at Nelson House will continue to have a larger quota of fish available to them than they have harvested in the past five years.

The potential annual earnings by Nelson House fishermen from commercial fishing activities are approximately $40,500 gross and $26,700 net income. In comparison, average gross and net earnings over the past five years have been $4,500 and $2,700 respectively. Table 17 below provides further details on potential earnings.

Table 17

POTENTIAL ANNUAL EARNINGS BY NELSON HOUSE FISHERMEN FROM COMMERCIAL FISHING

Lake	Quota	Potential Gross Income[*]	Potential Net Income[**]
Baldock	80,000	$10,768	$ 5,968
Gauer	60,000	11,250	7,650
Leftrook	30,000	5,175	3,375
Uhlman	20,000	2,696	1,496
Wuskwatim	40,000	10,588	8,188
TOTAL	230,000 <	$40,477	$26,677

[*] Value of fish based on Freshwater Fish Marketing Corporation's summer 1973 prices, f.o.b. lakeside.

[**] Production costs = $0.06 per pound

NOTE: In addition to the above lakes, Suwannee, Rat, Mynarski and Wapisu Lakes are available to Nelson House fishermen for commercial fishing. However, these lakes produce cutter grade whitefish which is the predominant catch species. Therefore, they are not considered economically viable.

The above information suggests:

a) that the potential earnings from commercial fishing are not presently exploited fully, and

b) that even if the full potential were achieved, commercial fishing is unlikely to be significant in terms of future economic development. For example, the potential annual income for Nelson House fishermen is approximately $26,700. By comparison, local employees of the Hudson Bay store earn a total of $26,800 annually.

Domestic fishing provides a greater benefit to the community than commercial fishing. A survey of Nelson House residents indicated that fish provided approximately 11,500 household meals during the past year. At $4 per household meal the value of this fish is $46,000.

At present, Footprint Lake is too shallow to be fished extensively, although nets are sometimes set at the narrows northeast of the community. Provided no dam is built between Footprint and Threepoint Lakes, water levels in Footprint will rise, thus improving the prospects for domestic fishing.

At present, most of the domestic fish is caught in the lakes at the headwaters of the Footprint River and in Wapisu and Wuskwatim Lakes.

Recommendations

1. THAT opportunities to fish for a living be maintained.

2. THAT Manitoba Hydro initiate discussions with fishermen who fish Wuskwatim Lake regarding mitigation and/or compensation on the following issues:

   a) Net loss at Wuskwatim Lake due to floating debris.

   b) Motor and/or boat damage at Wuskwatim Lake resulting from "deadheads."

   c) Income loss resulting from reduced catch due to floating debris on Wuskwatim Lake.

c. Hunting

Hunting provides approximately $34,200 in income-in-kind. This consists of meat from waterfowl, moose, grouse and ptarmigan. It is estimated that this activity provides 2½% of the total community income. Table 18 lists the estimated number of household meals derived from hunting, by season, while Table 19 lists the estimated value of country food.[1]

Table 18

NUMBER OF HOUSEHOLD MEALS DERIVED FROM HUNTING
NELSON HOUSE*

Game	Spring	Summer	Fall	Winter	Annual
Waterfowl	1,388	1,851	658	113	4,010
Moose	113	1,440	62	31	1,645
Grouse/ Ptarmigan	-	-	46	72	118
TOTAL	1,501	3,291	766	216	5,774

*Source: Interviews conducted by the Social and Economic Impact Study Team.

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[1] For the methodology utilized to derive estimated values, see Technical Report #5, Cross Lake Community Profile, Appendix 3.

Table 19

VALUE OF FOOD DERIVED FROM HUNTING NELSON HOUSE*

Game	Spring	Summer	Fall	Winter	Annual
Waterfowl	$7,634	$10,180	$3,620	$ 622	$22,056
Moose	791	10,080	434	217	11,522
Grouse/ Ptarmigan	-	-	253	396	649
TOTAL	$8,425	$20,260	$4,307	$1,235	$34,227

*Source: Interviews conducted by the Social and Economic Impact Study Team.

The annual moose harvest is 25-30 animals, with a potential harvest of several more. As a result of the diversion, there will be an immediate loss of summer feeding areas, which could in turn result in a loss of a potential harvest of 10-12 animals. The longer run effects are unknown at this time.[1]

Waterfowl staging areas along the Rat and Burntwood River will be lost after flooding. However, waterfowl using the large, open lake areas for short migration stops will not be significantly affected by flooding.[2]

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[1] Wildlife Resource Impact Assessment, Preliminary Report, op. cit.

[2] Ibid.

The diversion will likely cause some impact on hunting by Nelson House residents. For example, moose has been hunted along the waterways. Because of the increase in water levels, this method of hunting will no longer be possible in some areas since many of the shorelines will be obscured by timber standing along these waterways.

In addition, the competition for game, especially moose, between local residents and non-resident sport hunters is likely to increase as a result of the project and the improved access to hunting areas provided by the Thompson-Leaf Rapids road.

d. Forestry

During the past year, the sawmill at Nelson House was not in operation, therefore, no income was derived from this activity. However, wood is a source of fuel for approximately 154 houses at Nelson House. The type of wood used is "dry wood," i.e., dead and preferably standing timber. Assuming a $250 fuel cost per home per year, the value of the fuel wood to Nelson House is $38,500 per year and this sum accounts for 3% of the community income.

Flooded trees could provide an additional source of fuel in the winter time. However, remote communities will depend less on wood as electricity becomes available. Although electric heat is not yet available at Nelson House, new homes are being designed in such a way as to allow for the installation of electric heating. Thus, wood is likely to be less important as a future source of fuel.

4. The Wage Economy

Wages were the most significant source of income at Nelson House in 1972/73. Total wages earned amounted to $744,200 or 58% of the total community income. Temporary jobs, mainly in construction, provided $595,000 or 46% of the community annual income and permanent jobs provided $149,200 or 12% of community income. A summary of the wage economy is listed in Table 20.

There are 44 permanent jobs in Nelson House. Twenty-four of these jobs are held by Nelson House residents - 17 are associated with senior governments and 7 are associated with the private service sector.[1] The government jobs are with the school,

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[1] Information was derived from communications with local representatives.

Table 20

SOURCES OF WAGE INCOME
NELSON HOUSE, 1972/73

Sector	Income	Number Employed	% of Income
Resource Development			
Hydro	$470,000	40 (avg.)	63
Fur	-	-	-
Fish	-	-	-
Forestry	-	-	-
	$470,000	40	63
Government			
Education & Medical	$ 70,000	10**	9
Construction	125,000	17	17
Administration	49,200	7**	7
	$244,200	34	33
Service			
Retailing	$ 26,400	6**	3.5
Other	3,600	1**	0.5
	$ 30,000	7	4
TOTAL	$744,200	81*	100

*Twenty-four jobs are permanent while the remaining 57 are of a temporary nature.

**Denotes permanent employment.

Source: Manitoba, Departments of Northern Affairs and Mines, Resources and Environmental Management.
Canada, Departments of Secretary of State and Indian and Northern Affairs.

the nursing station, the Band Office and the Manitoba Department of Mines, and Resources. The private sector jobs are with the Hudson Bay store, Manitoba Hydro and the Manitoba Telephone System. A summary of permanent jobs and wages are listed in Table 21.

Table 21

SOURCES OF PERMANENT EMPLOYMENT - NELSON HOUSE*

Agency	Total Permanent Jobs	Jobs Held by Local Residents	Resident Income
Hudson Bay Store	9	6	$ 26,400
School	22	7	50,500
Nursing Station	5	3	19,500
Band Office	6	6	32,200
Department of Mines & Resources	1	1**	17,000
Manitoba Hydro/Telephone	1	1	4,400
TOTAL	44	24	$150,000

* Source: Manitoba Department of Northern Affairs and Canada, Department of Indian and Northern Affairs.

** Plus part time.

The Hudson Bay store employs six local people out of a staff of nine. These six people earn approximately $26,400 annually. This sum is almost equivalent to the net cash income derived from fishing and trapping combined.

The National Health and Welfare Department employs three local people full time at its Nursing Station - a maintenance man, a housekeeper and a secretary. The combined wages of the three employees is approximately $19,500 annually. In addition, two nurses are employed at the Nursing Station who are not long term residents of Nelson House. At the present time, four women from Nelson House are employed as nurses in other centres in the province. There seems to be a preference by the young and better educated to migrate to larger centres for employment.

The Manitoba Department of Mines, Resources and Environmental Management employs one man full time who is a long term resident of Nelson House. In addition, a number of fire fighters are employed. The number of men employed depends on the number and size of the fires. Up to thirty men have been employed at one time for fire fighting duties. Although fire fighting can be expected to be a source of employment in the future, it is only of a temporary nature. In addition, it is a low paying job. Fire fighters earn $13.50 a day plus food. The total local Mines and Resources wage bill is estimated at $17,000 annually.

Twenty-two people are employed at the school in Nelson House. Seven of the 22 employees are long term residents of Nelson House - four teachers and three janitors. Three of the teachers are teacher's aides who expect to receive teacher certification within the next two years. It is not expected that more than three additional residents will teach at Nelson House in the next five years. Nelson House residents earn approximately $50,500 annually from employment at the school out of a total wage bill of $180,000.

The Nelson House Band Office employs six people. These people include the Chief, the Band Manager, a secretary, a janitor, a police constable and a home school co-ordinator. All Band Office employees are long term residents. The total annual wages earned are approximately $32,200.

Some opportunity exists for additional employment of local residents within the community in permanent jobs. It is expected that government will hire more local staff in the future in its administrative and development activities. However, it is not expected that there will be a significant increase in the number of teachers and nurses resident at Nelson House.

By comparison, an average of 57 "temporary" or seasonal jobs were held by Nelson House residents. Collectively, these accounted for approximately $595,000 in wages.[1] The jobs were associated with the Manitoba Hydro development and with government financed construction activities in the community. In addition, there was temporary employment in the fur, fishing and forest industries, as well as Local Initiative Programs and Provincial Employment Programs.

An average of 40 men were employed at the Manitoba Hydro development in the Notigi area over the past year and approximately $470,000 in wages were earned. The actual number of men employed was much higher because of the high turnover rate. (See Section b., The Labour Force.)

It is estimated that an average of 17 temporary jobs were provided by government construction activities and $125,000 in wages were paid during the year.

A major government construction activity in Nelson House over the past year was the construction of a school. Throughout the year an average number of 15 men who are local residents were employed. According to the project manager, most of these men were unskilled. However, two are heavy equipment operators. The turnover rate at this job was extremely high. The project manager estimates that to keep a crew going, a labour pool of four times the number of men working at any one time is required.

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[1] Information derived from interviews with Hydro Contractors and field staff of Manitoba Department of Northern Affairs, spring, 1974.

Other construction work in the community was associated with government housing programs. There is an ongoing housing program for the community. To date, however, these houses have been built by outside contractors, who hire their own staff. No estimate of the number of jobs in the housing program is available.

Residents of Nelson House generally occupied junior positions in the construction activities because of their high turnover rate and lack of skills. An employee must gain experience in a junior position before moving up to a more senior position. In addition, it is a general rule among the contractors that if a man takes time off without notice, he is fired.

Most of the men employed in the hydro development held jobs that were of an unskilled nature. These consisted of timber clearing and working for Manitoba Hydro on survey crews. The majority of men working for the timber clearing contractors were cutters while others piled and burned the bush. Only a few were heavy equipment operators.

The wages earned by such employees were quite high. One contractor estimated that the men earned up to $1,500 per month. In addition, they received their room and board at a minimal cost of $2.50 per day.

Timber clearing activities employ a high percentage of labourers (60%), while the construction of the control structure utilizes a lower percentage of labourers (18%).[1] The timber clearing project has employed an average of 40 Nelson House workers. However, it is doubtful whether this same number will be employed at the construction site because of the need for skilled workers at the site and the lower level of skills of Nelson House residents. Table 22 lists the total labour requirement and the requirement for unskilled workers.

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[1] Manitoba Hydro.

Table 22

ESTIMATED WORK FORCE - NOTIGI*

	Total	Unskilled
1974 - May - August	250	50 Labourers
September - December	200	40 Labourers
1975 - January - April	150	30 Labourers
May - August	100	20 Labourers
September - December	80	15 Labourers

*Source: Manitoba Hydro.

Other potential sources of work include working in the sawmill and packing fish. However, the sawmill did not operate during the past year although it is planned that it will be operating this fall. Presently, 18 men are working cutting saw logs and fence posts for the sawmill. Little opportunity exists to earn wages from packing fish. Fishermen normally pack their own fish at lakeside and ship the fish to an agent. However, at times one man may be hired to help the fishermen pack the fish and look after the weigh bills. The wages earned by this person would be insignificant as compared to wages earned elsewhere.

Most furs are sold to the Hudson Bay Company at Nelson House. In the future, the Nelson House Trappers' Association may operate their own depot where the fur will be graded and then sent to the market. It is planned that the fur depot will be opened after the fur development program becomes operational.

The temporary construction jobs will end within two years. School construction is expected to end in the fall of 1974, and the construction activities at the Notigi site are expected to end in 1975. The wages from hydro development were earned mostly from timber clearing activities which absorbed a large number of unskilled workers.

The construction of the Notigi control structure will employ a greater percentage of skilled tradesmen and fewer labourers than timber clearing activities. Timber clearing activities will end in April of 1975.

In the longer term, provision of wage employment related to the skills of the Nelson House work force must be increased if the Nelson House economy is to expand. Some opportunity exists for employing men at the mine in Thompson. The feasibility of a commuter operation between Nelson House and Thompson should be investigated further. More significantly, two to three thousand jobs will be available over the next 15 years in the Lower Nelson River hydro developments.

Job placement and training programs related to these developments have the potential for making a significant impact on wages earned by the Nelson House work force. Such programs should be incorporated into an employment strategy for northern Manitoba.

The income derived from wage employment accounted for 58% of the community income. Eleven percent derived from permanent jobs and 47% from temporary construction jobs. Of the 47%, 10% was earned at construction jobs located in the community and 37% was earned outside of the community at the hydro development project. These facts suggest that the Nelson House workers are willing and able to work outside of the community. However, within two years such jobs will no longer be available. An opportunity exists for government to assist this labour force to find alternative work.

Recommendation

> THAT appropriate government agencies, in consultation with local representatives, develop an effective employment strategy to provide real employment opportunities for Nelson House residents in jobs at the hydro

developments on the Churchill and Lower Nelson Rivers, as well as in mining and other jobs in Thompson.

5. The Transfer Payment Economy

In 1972/73, transfer payments in the form of social assistance, social security and children's allowances, made up 28% of the community income or $358,000. Social assistance payments consisted of $217,000, family allowances $60,000, and old age pensions $82,000. The social assistance payments were divided into medical, social and unemployed employables categories. Thirty-four percent of the payments were in the medical category, 39% in the social category and 27% went to unemployed employables. (See Table 23.)

Social assistance payments were made by the Canada Department of Indian Affairs and Northern Development to Treaty Indians and the Manitoba Department of Health and Social Development to non-Treaty residents. Payments to a Treaty resident population of approximately 1,200 amounted to $192,436 or $160 per capita for the year. This $192,436 consisted of $70,102 in payments to people with medical problems, $69,240 in payments to unmarried mothers, orphans, etc. (social cases) and $53,094 in payments to

Table 23

SUMMARY OF ANNUAL TRANSFER PAYMENTS TO NELSON HOUSE RESIDENTS - 1972/73*

	$		%
Social Assistance:	$217,024		60
a) Social		83,769	
b) Medical		74,419	
c) Unemployed Employables		58,836	
Family Allowance	60,000		17
Old Age Pensions	81,780		23
TOTAL	$358,800		100%

*Source: Manitoba Department of Health and Social Development.
Canada Department of Indian and Northern Affairs.

unemployed employables. In percentage terms, 36% of payments were made for medical reasons, 36% of payments for social reasons and 28% for unemployed employables. (See Appendix 2.)

Payments to a non-Treaty resident population consisted of $24,588. The $24,588 consisted of $4,317 for "medical" cases, $14,529 for "social" cases and $5,742 to unemployed employables. These payments consist of 18% for medical, 59% for social and 23% for unemployed employables. (Appendix 2)

Total social assistance payments, both Federal and Provincial consisted of $217,024. Thirty-four percent of these payments ($74,419) were accounted for under the medical category, 39% ($83,769) under the social category and 27% ($58,836) under the unemployed employables category.

The old age security and guaranteed income supplement payments of $81,780 were made to 47 residents of Nelson House. These payments are made to people 65 years of age and over. In April, 1972, old age security payments were $82.88 per month and the maximum supplement payments were $67.12 per month for single persons and $59.62 for married persons. The maximum supplement payments are made to pensioners with no other income. For every $24 in monthly income, a reduction of one dollar is made in the monthly supplementary payments.

In this study, the average payment of $145 per month per person was used in calculating the annual old age and supplementary payments. The maximum of old age security payments and supplementary payments in April, 1972 was $150 per month for single persons and $142.50 for married persons.

Family allowance payments of $60,000 was made to mothers of 716 children between the ages of birth to 18 years. The final family allowance payment is made on the month of the "child's" 18th birthday.

For the period between April, 1972 to March, 1973, family allowance payments were $6 per month for persons between birth and 10 years of age, $8 per month for those between 10 and 16 years and $10 per month for those between 16 and 18 years. However, in October, 1973 the payment rate increased to $12 per month for all children to 18 years of age. Then in January, 1974, the payment increased to $20 per month for all children to 18 years of age. (The final payment is made on the month of the 18th birthday.)

It is interesting to note that the increase in family allowance rates to $20/month/child has increased the community income by $52,000 annually. By comparison, net cash income from fishing and trapping does not exceed $30,000.

If the number of jobs available to Nelson House residents decreases, it is expected that social assistance payments will increase.

6. Community Infrastructure

The level of community services available in Nelson

House has steadily increased over the past fifteen to twenty years.[1] At present there is one modern school, a nursing station, office facilities for local government, a post office, two stores (including the Bay store), and two churches. Recreational facilities include two halls which are utilized as theatres, hockey rinks and sports fields. Police services are provided by a Band Constable and regular R.C.M.P. patrols. There is no centralized water supply and sewage system or garbage disposal service. The community recently received telephone and television services. Diesel electric power services have also been available for a few years.

The transportation infrastructure can be divided into two categories; internal and external. Internal transportation facilities include a gravel road connecting Poplar Point, Dog Point, Mission Point (sometimes referred to as R.C. Point) and the non-Treaty settlement. The lake is also utilized in summer and winter as a convenient transportation corridor. There is no commercial internal taxi or bus service available. However, bus service is provided to school children.

External transportation services are provided by air, land and water. An airstrip is maintained and operated by the Manitoba Department of Northern Affairs. Charter air services are available from Lambair and Ilford-Riverton Airways from Thompson and other larger communities. In addition, Lambair offers two scheduled flights per week from Thompson. Footprint Lake is utilized by float planes during open water months. Water transportation is generally confined to local travel with the exception of fishermen and trappers who use these natural corridors regularly. Road transportation into the community is provided by an all-weather access road from the Thompson to Leaf Rapids Highway (P.R. #391). Daily bus service to Thompson, Leaf Rapids and Lynn Lake is available.

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[1] Information outlined in this discussion concerning the nature of community services was primarily derived from Manitoba Department of Northern Affairs files.

Impacts

The expected changes in the local water regime will have significant impacts on the Nelson House community infrastructure. Potential shoreline effects are of two types:

a) the immediate effect of raised water levels on areas at various levels, and

b) the long-term effect caused by erosion and slumping of banks.

The immediate effect of higher water levels would be to bring shorelines closer to settled areas. In addition, if Footprint Lake rises to the 810' level, some areas above this contour will become islands with newly created shorelines. An elevation of 810 feet is expected in the winter months when the Wuskwatim power site is developed. Further, as mentioned in the section entitled, "Water Regime," elevations of at least this magnitude can be expected during extreme ice jam conditions without Wuskwatim development. Under such circumstances, the entire Poplar Point area would be cut off from the rest of the community by a low-lying flooded area.

Some of the shoreline at Nelson House is predominantly composed of clay or silt.[1] From the standpoint of long-term effects, natural wave action against the new banks on such areas will cause erosion of the soil cover and eventual slumping. The extent to which erosion and slumping will occur will depend upon several factors. A rapid and substantial decrease in lake level will cause soil drainage and sliding, as will sudden thawing in permafrost areas. With a power development at Wuskwatim, it should be possible to prevent ice jams. Therefore, extreme fluctuations in water levels at Footprint Lake are unlikely to occur. The possible effects of increased water levels on permafrost areas are difficult to predict without undertaking further engineering studies. However, a factor which is likely to contribute to the slumping process is the existence of large cracks which currently run parallel to the banks at Nelson House.

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[1] This discussion is based on information contained in Anticipated Shoreline Effects of Raised Lake Levels at Nelson House, Manitoba, Lake Winnipeg, Churchill and Nelson Rivers Study Board, August 1973.

Areas of Nelson House which could be affected by erosion and slumping include the bank adjacent to the airstrip, several areas near buildings, and four cemetery locations. It is possible to reduce the damage to such areas by applying rock rip-rap to the banks either before or slightly after flooding.

In Nelson House, the majority of houses and the airstrip are on high, well-drained ground. At present, there are 44 structures below the 815' contour.[1] These consist of:

a) 4 public buildings (2 are portable pumphouses),

b) 17 houses,

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[1] Memo to J. D. Collinson from Manitoba Hydro dated October 24, 1973.

c) 21 sheds, and

d) 2 main public docks.

In addition, a number of small boat wharves will be flooded and modification on one sewer out-fall may be required.

To adequately protect property from flooding, it will be necessary to establish a severance line around 820' A.S.L. A severance line of 815' A.S.L. is too low to allow a reasonable margin of safety. However, to date, there is no data on property situated between 815' and 820'. Thus, the above estimate of flood damage is low. To protect property from bank erosion, an even higher set-back line is required.

According to a forest inventory by the Department of Mines, Resources and Environmental Management, approximately 1,149 acres of Indian Reserve lands and seven acres of patent property will be subject to flooding. It should be noted that this estimate was based on a contour line of 800' A.S.L., and therefore is a minimum estimate of land subject to flooding.

The Nelson House access road will be flooded in two areas near the community. These should be either re-routed or upgraded to 820' A.S.L. The internal community road from the airstrip to Poplar Point will be flooded in three locations (a total of approximately 5,790 feet).

It should be noted that if the Footprint River dam is constructed, the above impacts will in most cases, not occur. However, if this structure is not built, the following actions will be necessary.

Recommendations

THAT Manitoba Hydro in consultation with local representatives, replace, relocate or compensate for real property losses incurred as a result of the Churchill River Diversion project's impact on Nelson House. Compensation for flooded reserve land must be included in these transactions.

THAT Manitoba Hydro implement a rip-rapping program to ensure that lake banks in the immediate vicinity of Nelson House are protected from erosion and slumping resulting from flooding associated with the Churchill River Diversion project.

B. THE SOCIAL SYSTEM

1. The Social Profile

To understand the nature of social impact it is first necessary to understand the rationale and anatomy of the community. The community exists to perform certain specific functions:

a) the economic function of production, distribution and consumption of goods and services,

b) the socialization function of transmitting knowledge, social values and behaviour patterns to its individual members,

c) the social control function of influencing its members toward conformity with its norms,

d) the social participation function of providing an opportunity for its members to interact socially, and

e) the mutual support function of providing mutual assistance daily, but especially in times of need or stress.

Arising out of the pursuit of these functions are many interrelated elements including history, beliefs, values, attitudes, norms, goals, leadership positions, power, sanctions for social control and facility. The elements, though interrelated, can be isolated and studied.

These elements find expression, and the functions are performed, through various recognized processes which include: communication; institutionalization (the way organizations assume a structure and act and interact in a predictable way); systemic linkage (the way community groups and organizations relate to each other to form an integrated community base and the way they relate to systems that are external to the community, e.g., local trapper's association, co-operative organization, community councils, churches, etc.); problem solving and decision making; and boundary maintenance (the process whereby a community strives to preserve its unique identity). It is important that these processes be traced in order to understand a community.

However, due to the interrelated nature of all of the functions, elements, and processes, the significant social impact of change can not meaningfully be studied as the impact on the community as a whole. Rather the study must assess the way a change may affect some of the community elements; may interfere with some of the functions; may block, circumvent or subvert some of the processes; or generally influence some combination of elements, functions and processes to the point of generally disrupting the community activities and creating imbalances in a community's sub-system. This disruption will require adjustment and readjustment as the community seeks out and establishes new ways of thinking, believing, acting and interacting while it strives to maintain social equilibrium.

To understand, assess or even predict what the social impact of change may be with a view to suggesting and/or recommending appropriate mitigating social intervention, it is necessary to know a community. The following manner of isolating and studying the elements, functions and processes that constitute a community social system is designed to provide the necessary understanding.

(a) Knowledge and Beliefs

To understand what a community knows and believes, for example, about developments that will affect (or are affecting) change, is to gain insight into:

a) the community's sources of information - the channels of communication within the community and with the world outside,

b) the degree of community information - whether it is specific, general, or non-existent re the facts that it has about certain changes, the impact of that change, etc.,

c) whether the community can be expected to participate meaningfully in change on the basis of the knowledge it has, and

d) what media of communication an external agency should use in getting information into the community - how communication within the community can be facilitated.

The knowledge and beliefs which are prevalent in a community are products of the quality and quantity of information received by the community and how effectively it is disseminated through the community.

1) Receiving Information

Regarding hydro developments the community of Nelson House has formally received information from a variety of outside sources:

a) a series of community meetings, with hydro representatives, with study personnel and with provincial agency people, during which general information regarding hydro development and specific information regarding water level changes and some of the effects of these changes was presented and discussed.

b) native communications in Thompson introducing the interview team - including some general background information regarding the study team but providing no information about hydro *per se*.

c) a one hour (24 Hours) television program outlining the background behind the Churchill-Nelson Rivers development controversy. This program was general, and provided no specific information about hydro related changes at Nelson House.

d) the Amisk Newsletter geared specifically to events along the Churchill and Nelson Rivers.

e) general news on both radio and television.

2) Disseminating Information

Given these attempts at providing information, it is surprising, but revealing, that local people consider the radio their prime source of information re hydro development, yet radio has not been used to disseminate objective, factual information.

Other major sources of information about hydro developments have been informed individuals in the community (such as the Chief and Council and more recently the hydro committee), Band meetings, meetings with agency people, and television.

In summary, Nelson House information tends to be disseminated by word of mouth. In dealing with a complex issue of a technical nature, such as the hydro developments, the word of mouth procedure and the reliance on memory is bound to result in distorted information or inaccurate generalizations. (For a summary of information sources for various issues, see Table 24.)

Table 24

NELSON HOUSE INFORMATION SOURCES

ISSUES Source of Information	LOCAL EVENTS A Source	 Prime Source	PROVINCIAL OR NATIONAL EVENTS A Source	 Prime Source	HYDRO DEVELOPMENTS A Source	 Prime Source
Formal Communications						
Radio	N. A.*		31	19	24	16
T.V.	N. A.		18	5	10	4
Printed Material	3	0	6	0	3	1
Notice Board in Bay	15	2	N. A.		N. A.	
Meetings (Band, Agency, etc.)	15	4	19	3	17	6
Informal Communications						
Visits Outside	N. A.		4	1	8	2
Informed Individuals in Community	11	4	15	5	18	7
General Discussion with Friends	33	20	N. A.		N. A.	
Regular Chit-Chat in Bay Store	19	4	N. A.		N. A.	
Regular Chit-Chat in Band Office	5	1	N. A.		N. A.	

*N. A. = Not asked and/or not relevant.

Beliefs arise out of the receipt and processing of information. If beliefs about a particular issue, e.g., hydro development, are consistent with the best known information about that issue, then the information process is and has been an effective one. In cases where beliefs are inconsistent with available knowledge, the problem becomes one of information-education. There are a number of prevalent beliefs in Nelson House. For purposes of evaluating the information process, each of these beliefs is compared or contrasted with the best available information.

a) The fear expressed by residents that after the hydro developments are completed, their livelihood will be destroyed through the loss of their trapping and fishing. Studies indicate that although there will be some resource disruption, it will be less severe than the community believes. For further discussion, see The Economy, pp. 34-86.

b) The belief that homes and buildings will be endangered through flooding or subsequent slumping. There is an indication that, if the dam designed to isolate

Footprint Lake from the Burntwood River system is not built, 10 homes and 18 other buildings will be affected by flooding and an additional 7 homes and 7 other buildings could be affected by slumping.[1]

c) The belief that the wildlife will be destroyed. Research results are generally inconclusive but there is indication that there may be some disruption to moose hunting but little, if any, disruption to waterfowl.

d) The fear that water will be undrinkable due to debris and if new wells are sunk they would be far from the homes. In fact, debris does not make water undrinkable.

e) The belief that residents have not been involved enough, either in the initial decision to proceed with the development or in any of the associated subsequent activities. This concern appears to have a valid foundation, since they were unaware that hydro would affect the community until late 1973.

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[1] Manitoba Hydro.

When probed, community people generally agree that hydro development is beneficial in one respect - that of providing wage employment - though many pointed out that such jobs are of a temporary nature.

The concern over the short term nature of the jobs created is both perceptive and valid. This situation is discussed at greater length in The Economy, pp. 34-86. The other areas of concern regarding the impacts of hydro developments are generally consistent with many changes being forecast by research; however, there are wide discrepancies between the magnitude of the changes as perceived by community people and that projected by research. These beliefs or concerns arise from an expectation of the impacts based on a general description of the hydro development. The findings of reports on the environmental and resource impacts have not been a part of the information upon which such beliefs are based.

A number of conclusions can be drawn from these observations:

a) Because information gets distorted or generalized in its dissemination through the community, as many people as possible should receive information relating to hydro on a more deliberate or formal first-hand basis.

b) While some individuals may have an understanding of the hydro developments, the majority of community residents have received only very general information about the project.

c) For the majority of people, the knowledge regarding how hydro development will affect their community, is not sufficient to enable them to participate meaningfully in decisions regarding change.

d) Written material is not an effective means of distributing information.

e) In spite of the efforts to date, there remains a need to deliberately disseminate digestible information and to ensure that this information reaches both the leadership nucleus and the rank and file of the community.

(b) Values and Feelings

An understanding of basic values and feelings provides a useful insight into the social, political and economic atmosphere of a community, and the reaction of a community to change.

In a transitional community, new values are emerging, often conflicting with and, therefore, adapting old values. Thus, values change with time but will occur much more slowly than technical change, for example.

Values and feelings are largely culturally determined. They result from generations of socialization and the influences of relatively new institutions, such as the church and school. They cannot necessarily be rationalized. Rather, they tend to be an intuitive "gut" feeling. Since values can give rise to views and attitudes which may be unrealistic but are nonetheless real to those who hold them, they must be recognized and respected by any interventionist.

There are some particularly strong values and feelings which emerge from a study of Nelson House:

- A feeling which has grown in recent years has been the emerging sense of autonomy - of being more in control of decisions affecting the Nelson House community than in the past when the Indian Affairs agent made most of the decisions.

- Community residents, particularly the older residents, who themselves did not have the opportunity for an education, place a strong implicit faith in the value of an education for the young.

- In a community supported by a traditional economy, the extended family was a functional unit and a focal point of life. In a transitional economy such as Nelson House, the value placed on the extended family remains although its functional importance is diminishing. These traditionally strong family ties bring with them commitments which are much more strongly felt than in the nuclear family structure of industrial society. The young people growing up in Nelson House feel a responsibility to return to the community to assist their parents and grandparents. Thus decisions to out-migrate have to be made at the expense of felt family commitments.

- The traditional pursuits (trapping, fishing, hunting), and the associated lifestyle are still valued by many residents, particularly the older people who still live in this manner, but also the young either in sympathy for the elders or in recognition of a lost potential (commercial or casual sport).

(c) Attitudes

Attitudes are formed on the basis of knowledge, beliefs, values and feelings. Thus, they are a product of information, experience, and emotion; as such they contain a personal conviction which, like values, cause them to be very resistent to change. Once an attitude has been formed, there is a tendency to accept information and information sources which agree with a point of view, and reject those which do not.

In Nelson House, there are a number of attitudes directly relevant to the present situation and indirectly relevant to the future of the community.

1. The long history of Indian Affairs domination in community decisions and a strong value placed on community self-determinism as this emerges, have combined with many other factors to give rise to negative feelings towards governments (Federal and Provincial) and their representatives. This negativism can still be eliminated by frank, open interaction where the intentions, integrity, and convictions of personnel can be evaluated. However, such acceptance comes only after much time and repeated effort.

2. There is a general attitude of mistrust toward Manitoba Hydro. This attitude grows from feeling that all Hydro activities are undertaken solely in Hydro's best interest and that if Hydro really cared about the well-being of the Nelson House community, the diversion scheme would not be undertaken. As a result of this attitude, there is a great deal of hesitancy in dealing with both individual and community decisions regarding Hydro developments.

These feelings give rise to general fears which might be iterated by a Nelson House resident as follows:

> "If I accept settlement for damage to my physical property, e.g., trapline cabin, will that mean that I won't get anything if my trapline production goes down as a result of flooding?"
>
> "Hydro was telling us this (a piece of information) -, should we believe them?"
>
> "How much is there that Hydro isn't telling us?"
>
> "This idea of Hydro's looks like it may be good for us, but what's in it for Hydro - because if there wasn't something, they wouldn't be offering it."
>
> "This idea of Hydro's looks good for us, but what are the bad points we can't think of and they probably aren't telling us."

It can be seen that attitudes like these are damaging to both sides. On the one hand, Hydro (with the pressure of its scheduling and phasing) is asking the community to hasten decisions on key issues. In an effort to assist them, Hydro is trying to provide information. On the other hand, the community is proceeding cautiously, recognizing the critical nature of these decisions, not entirely trusting the information they receive on which to base a decision, wanting to ensure the support of their community on the decision reached.

This individual and community uncertainty and the opinion that negotiations will yield more satisfactory returns if a united front is presented, has led to the formation first of the Hydro Committee in Nelson House and subsequently to the formation of an intercommunity committee (The Northern Flood Committee) made up of seven communities which may be affected by hydro development.

The goals of this committee are to:

-Oversee and give sanction to any continuing interactions, negotiations and activities related to Hydro development which involve the communities, and

-Obtain independent legal, professional and technical expertise to assist them in getting information and advice.

3. Arising out of the strong value placed on education for the young is the attitude that better educated young adults will be able to solve the problems of supporting the ever increasing population. Many feel that with a better education the young will be able to find employment in Nelson House, others feel that educated young leaders will be imaginative enough to be able to create jobs for those who need them.

   This attitude toward education as a panacea for future problems gives rise to a certain complacency which is ill founded. It is providing many residents with a false sense of security for the future, hence a lack of urgency about doing anything in terms of economic development in the community.

4. Another attitude, perhaps not as pervasive as the others but nevertheless worthy of note, is the strong sense of attachment to Nelson House - a preference to stay in Nelson

> House rather than move out to work. Many people seem to feel that the costs of leaving the familiarity and security (economically and psychologically) of Nelson House are greater than benefits which may accrue if they were to go elsewhere seeking employment. Others would be interested in moving but only if they could be guaranteed permanent employment.
>
> Young people are indecisive about where they would like to live in the future - drawn on the one hand to their family and friends and the familiarity of Nelson House, and drawn on the other hand to the "luxuries" of the industrial world which they are experiencing while going to school.

Future migration from Nelson House is likely to be relatively low and predominantly amongst the young. These young people, drawn both to Nelson House and the outside, and feeling some responsibility to the family, are likely to have intermittent encounters with the outside - returning home whenever difficulties are encountered.

Combining an attitude of future security through education with a low propensity to outmigrate, one has a basis for some speculation about the future. If outmigration remains low, as it appears it will, and steps toward developing any forms of local enterprise remain minimal or non-existent, there will be a very high rate of unemployment in Nelson House. This will either a) force people to move out at the expense of the value placed on family ties or b) choose to remain in Nelson House dependent on a transfer economy in spite of the raised expectations acquired through education. If trends stay the same as at present, either of these results will bring much psychological stress - particularly to the young adults in the community.

(d) Leadership

In a traditional community, gathering its livelihood from the land and living in relative isolation from outside services, the social and political structure tends to be simple and functional. People live in extended family groupings, each one looking to its family head for leadership. When a number of these families are living together as a community, it is customary for one or two families to gain more influence than the others. The heads of these families tend to become the dominant leaders in the settlement. In this situation, leadership is concentrated among very few older patriarchs in the community.

In order to determine the present leadership structure in Nelson House, a variety of opinions were solicited. The following three groups were asked to identify the leaders:

1. "outside [illegible] had close contact with the co[illegible] some extended period of time,

2. the leaders as identified by this group, and

3. the general community - the rank and file.

The resultant leadership structure and the wide discrepancy of opinion - particularly between the rank and file and the "identified" leaders - gives a basis for several observations (see Table 25):

1. The rank and file of the community have a rather unsophisticated view of leadership or power. They tend to identify leaders by the

Table 25

LEADERSHIP AND POWER RELATIONS

BY FREQUENCY

	of 37 Community	Rank	of 10 Outside	Rank	of 12 Leaders	Rank
A.	34	1	10	1	11	1
B.	19	7	9	2	9	2
C.	7		4	8	9	2
D.	8	9	5	4	9	2
E.	32	2	4	8	6	5
F.	3		1		5	6
G.	0		1		4	7
H.	0		0		4	7
I.	0		8	3	4	7
J.	3		5	4	3	10
K.	1		3		3	10
L.	1		2		3	10
M.	32	2	1		3	10
N.	0		0		3	10
O.	30	4	2		2	
P.	8	10	1		2	
Q.	1		2		2	
R.	0		0		2	
S.	30	4	1		2	
T.	0		0		2	
U.	30	4	1		2	
V.	0		1		2	
W.	2		0		0	
X.	9	8	0		0	
Y.	7		0		3	
Z.	4		5	4	1	
Al.	0		5	4	0	
Bl.	1		4	8	0	

positions which they hold rather than their ability to influence. As a result, rank and file identified the Chief, and members of the Band Council as the main leaders in Nelson House.

2. The "identified" leaders had a more sophisticated view of leadership. It appears that they were more able to identify those who have most influence in reaching community decisions. In this case, the Chief and three or four other influentials were mentioned most frequently, but not the members of the Band Council.

3. The political system in Nelson House is in a process of modernization from the traditional system. Leadership still tends to revolve around a relatively few people but this leadership base is broadening in recent years as more organizations or committees are formed and gain in confidence and in strength.

4. The value which older people place on education has resulted in a growing confidence in young people because of their higher educational attainments. As a result, leadership in Nelson House is strikingly young and these young leaders are given implicit support by the rank and file.

The combination of these processes of change and the low level of political sophistication of the rank and file provide suitable conditions for the development of a power elite. However, and much to the credit of Nelson House leaders, it appears that instead of concentrating power in an elite, they have made a conscious effort to maintain an input from the rank and file in community affairs and to create new committees which allow the development of more leaders and a broadening power structure. This point is demonstrated in both the discussion on decision-making and in the later discussion on organizations.

(e) Decision Making

Looking at the history of Nelson House, three eras of decision-making can be identified.

1. In the distant past, in Nelson House, as in other similar communities, leadership was achieved by reputation. People were not elected to formal positions nor were they given specific guidelines, rules and parameters upon which to exercise the authority of their position. As a result, the exercise of the power and privilege associated with leadership was usually subtle and indirect. This indirect leadership influence resulted in a slow process through which community decisions were postponed or delayed until a concensus was reached. The concensus decision-making process proved both advantageous and appropriate; advantageous in that it was an effective method of preventing or managing conflict and turmoil in the community; appropriate in that the decisions required were of a local nature and few in number.

2. Next came a period when agency people came to the community requiring decisions which contained a new component, the external agency. In many cases, unfamiliar with the working of the agencies and the

types of decisions asked of them, community people deferred to the opinion of the agent.

3. In the past five to ten years with the changing policy of the Indian Affairs Branch and the increasing awareness of community people, decision-making concerning local affairs has returned to the residents of the community.

In Nelson House, the type of decision-making which has been adopted is not the traditional concensus approach, but is still time consuming in that it involves a heavy input of general public opinion. Issues are raised at a general Band meeting and are discussed by all who wish to speak. Following this process of public debate, the Chief and Council make their decision on the issue. Thus, while the Chief and Council makes the final decision on most issues, their decisions are based on hearing opinions of those who attend Band meetings.

Community people are pleased with this greater involvement in decision-making and, as a result, feel that people have more commitment to the decisions now than ten to fifteen years ago.

The major conclusions to be reached from this discussion is that public involvement in the Nelson House decision-making process is time consuming but results in a high degree of commitment to decisions reached.

(f) Organizations - Horizontal/Vertical Linkages

A number of formal organizations and committees have emerged in Nelson House in recent years, some to supplement and assist the role of the elected leaders (Chief and Council) and some to assist in the operations of other community institutions. There are at present five such committees which operate on a continuing basis and a further two which are organized around annual events or needs.

A number of these committees have gained much confidence and strength in recent years. While most have strong ties of trust and respect with the "outside" organizations they relate to vertically, all the committees perceive themselves to be relatively free to pursue the courses of action which they have adopted and at least half are not required to make any kind of report or justification of activities to any outside agency or individual, i.e., they are relatively free of vertical pressures and controls. However, some of these committees have rather limited or superficial terms of reference and it is difficult to predict how much of this apparent autonomy they would retain if they chose to broaden their scope. It is also the committees with limited mandate which appear to operate quite independently of other community committees.

On the other hand, there are two committees in particular which are interacting more closely with other community groups, particularly the Chief and Council, and appear to be constantly testing the limits of their responsibility and authority with a view to expanding their scope.

i) The School Committee

When the school committees were first formed they had a rather limited authority and responsibility such as attending to the heating and caretaking. However, in recent years, the Nelson House School Committee has gradually developed a more responsible position including the hiring (and firing) of principals and teachers. This progress has been achieved as a result particularly of the initiative displayed by the local school committee in wanting more responsibility but also the policy and assistance of Indian Affairs in allowing and helping this process to take place.

ii) The Hydro Committee

This committee has been formed to deal with hydro developments as they concern the community of Nelson House. The formation of this committee and its subsequent activities are solely the result of local initiative and its terms of reference have been determined by the committee in co-operation with the Chief and Council.

The Chief and Council, which is the supreme formal authority in Nelson House decision-making, has begun to work with these committees and to delegate responsibilities to them on issues within their mandate.

In summary, in recent years the community of Nelson House has begun to adopt and utilize the formal committee process for "getting things done." While this process is still in its formative stages, it serves as an indication that there is an increasing horizontal integration within the community's institutional structure.

This description of the social system of Nelson House was designed to provide a greater understanding of the way the community performs its community relevant functions;

in many cases the way it has performed these functions in the past; and to provide a basis of information for understanding the social impact section which follows.

2. The Social Impact

(a) Operational Definition of Social Impact

As stated earlier, the elements and processes in a social system are interrelated and, therefore, change in one component will result in subsequent change in other sectors. Nelson House is a community in the process of change, in a transitional state between the traditional economy and the wage economy. Accompanying these changes in the economic sector are changes in the social system.

The situation which faces the community now is one of continued change, but change at an accelerated rate due to the existence of hydro developments.

The social impact is the stress which is placed on the community's social system when it is not able to adjust to change as quickly as that change is occurring.

(b) Discussion

A community must develop new ways of doing things in order to be in control of change, especially when the change is inevitable and even imposed. Some changes are relatively easy to achieve. For example, when a utility changes water levels, other inherent physical changes, environmental changes and economic changes follow naturally even though they may be resisted. Similarly, it is easy to effect changes in a community communication system, e.g., when a community suddenly has access to telephones and television, or in a community's transportation system, e.g., when a road comes to the community or a community gets an airstrip and scheduled air service.

However, the rate of technological change is invariably more rapid than cultural changes involving change in perceptions, beliefs, values and social structures. Therefore, resistance to technological change is inevitable. When technological change proceeds despite this resistance, pressure is exerted on the elements and processes (the social system) of the community.

The ability of a community to cope with change and the stress inherent in change[1] will depend largely on a community's autonomy and viability, taken together to mean the capacity of a community to function effectively on a self-determinism basis, i.e., to perform independently the economic, socialization, social control, social participation and mutual support functions.

In summary, social impact in a community is inversely related to the degree of control over change which the community can exercise. However, due to the interrelatedness of the components of the social system, social change cannot be viewed as proceeding along a fixed course to a fixed destination and, therefore, social impact cannot be predicted in terms of specific "happenings" or effects.

The difficulty of predicting specifics and the premise that impact is related to community autonomy and viability gives rise to the need to assess the elements and processes of the community in terms of the level of autonomy which they appear to represent. This approach will:

1. provide useful baseline data for future monitoring, and

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[1] For a detailed analysis of the social stress which accompanies rapid change, see Technical Report #1, Social Change and Stress: A Focus on Northern Development.

2. indicate the kinds of inputs which may be necessary to assist a community caught up in the dynamics of change to cope with the new situation.

(c) Impacts on Elements & Processes of the Social System

i) Knowledge (About Hydro Developments)

While some individuals in the community may have a sufficient understanding of the impending hydro developments, the community as a whole does not. Furthermore, the implications that the hydro developments will have for Nelson House are even more poorly understood.

Information has reached the community from a number of sources but it has arrived in "bits and pieces" rather than as a complete, comprehensive package. Furthermore, much of the information has been in a form which may be digestible to a few but not to the majority.

In terms of disseminating information throughout the community, written material is not used by the residents. The "word of mouth" procedure, which has served to replace the written word, tends to either distort or generalize information of a complex technical nature such as information about the hydro developments and its expected impacts.

As a result of the lack in both quality and quantity of information, the hydro development is having a psychological impact on individuals and a socio-psychological impact on the community as a whole, in terms of uncertainty regarding what will happen and a resultant, almost fatalistic, fear of impending doom. This feeling is also placing unprecendented pressure on the community's leadership to provide answers to people's fears. In their attempts to get information, these leaders have been confronted with a confidentiality issue around Study Board reports. This withholding of information, though well-intentioned, creates fears and mistrust in the minds of those who do not have access to the reports.

Recommendations

1. a) THAT at the discretion of and in consultation with the Northern Flood Committee and the Nelson House Hydro Committee a two-way information-communication process be set up with one person specifically charged with the responsibility of:

i) assisting the community in acquiring the kinds of information which it requires,

ii) assisting the community to interpret this information, and

iii) assisting the community to disseminate this information to a broad spectrum of the community.

b) THAT to facilitate a), at the discretion of the Northern Flood Committee and the Nelson House Hydro Committee, a local person from the community be hired to assist the agency person cited above.

c) THAT a mechanism be developed to facilitate the dissemination of information. One possibility for creating an interest and awareness in the community is through radio broadcasts on native communications in Thompson and on Thompson radio, supplemented by a series of community workshops. (Resource people with a thorough knowledge of the hydro developments and its impacts could be used to facilitate a more rapid information exchange.)

2. THAT to reduce the mistrust and assist in information flow, all reports resulting from the study process be made available and that in cases where the information is tentative and/or subject to change that fact be indicated, but the information not be withheld.

ii) Leadership

The leadership of Nelson House tends to be concentrated primarily among the Chief and Council, the Hydro Committee, the School Committee and a few professionals who are native to the community. This leadership structure is broadening as the local responsibilities of the community increase. Leadership is generally young - a result of the community's deference to the higher education and greater understanding of the "outside" world which the younger people have had the opportunity to acquire. Leadership is viewed primarily by role rather than by reputation. As such it is much more subject to change than the traditional system as new leaders may emerge to take charge of new situations and others may be changed through the election process.

iii) Decision Making

The current leadership is very sensitive to the process by which decisions are reached both within the community and within agencies which relate to the community. Local decision-making is based on the principle of public involvement (opinions and concerns of the residents are heard at public Board meetings and these are considered when making community decisions). It should be recognized that this decision-making process is time consuming but results in a greater understanding of decisions reached and more commitment to them on the part of the general Nelson House public.

This same philosophy on decision-making transmits itself to negotiations with government or Hydro agencies. Leaders are very sensitive to the process by which agencies reach decisions which relate to their community. They expect to be consulted or involved in these decisions regardless of how rudimentary that decision may appear to be to agency people. Furthermore, on decisions which are of considerable importance to the community, they wish to be able to consult with community residents regardless of the amount of time that process may take or the apparent urgency of the decision to be reached.

The general northern trend toward increasing local responsibility - greatly magnified by the presence of hydro developments - is placing considerable pressure on the existing decision-making style in Nelson House. However, the Nelson House general public, who only in recent years have begun to be involved in decisions, are reluctant, consciously or unconsciously, to relinquish this input. Therefore, pressure is placed on the leadership who on the one hand receive agency pressure to hasten decisions yet on the other hand receive community pressure to utilize a slower, less efficient process. The situation of leadership by role rather than reputation furthers this pressure in that leaders are not secure enough in their own future as leaders to make, independent from community support, the quantum jump to decision-making by elected representation. Therefore, continued agency pressure on the decision-making process may either result in a continued "slow down" on the part of the community leaders or in considerable turmoil in the community's leadership structure.

Recommendation

> THAT agency people working with Nelson House -- regardless of the time or logistical pressures which they may feel -- recognize and respect

the fact that, at this point in time, the Nelson House decision-making process is time consuming.

iv) Community Organizations

An important recent addition in Nelson House to the structure used in dealing with community affairs has been the emergence of strong committees which are being used to assist the Chief and Council.

These committees operate relatively independently of "outside" agencies (vertical linkages) and are now beginning to work together (horizontal linkages) in dealing with the affairs of the community.

(d) Ability to Cope with Change

The foregoing analysis of the Nelson House social system would appear to indicate that at the present time the community autonomy is relatively high in a traditional sense. Through the manner in which the social systems (elements and processes) have evolved in recent years, the community has advanced considerably in its capacity to control its own destiny, i.e., its viability and autonomy.

This is not to imply, however, that the community's viability is sufficient to cope with the significant change which will occur in the near future as patterns of living change for individuals and the community's social systems or patterns are caused to change accordingly. It is predicted that it is not. The community will probably require at various times improved inputs of information, improved dissemination of information, more streamlined decision-making processes and leadership training to assist leaders to use and handle these changes.

However, it is impossible to predict specific changes or impacts. Therefore, it is necessary to constantly monitor the community's social and economic situation. This profile provides the baseline data from which to monitor that change.

Recommendations

1. THAT a system of monitoring non-physical changes in Nelson House be established.

2. THAT appropriate positive social intervention be provided as the need is identified through the monitoring process.

This could take the form of workshops for understanding, perceiving and coping with changes; problem-solving techniques; new life skills; use of information; and leadership training.

APPENDICES

1. NELSON HOUSE: COMMUNITY INCOME FROM COMMERCIAL FISHING
2. SOCIAL ASSISTANCE DATA
3. THE WILD FUR DEVELOPMENT PROGRAM

APPENDIX 1

NELSON HOUSE

COMMUNITY INCOME FROM COMMERCIAL FISHING*

SUMMER - 1969

LAKE	WHITEFISH CLASSIFICATION	QUOTA LBS.	HARVEST LBS.	FISHERMEN'S GROSS INCOME $	PRODUCTION COSTS ($0.06/LB.)	FISHERMEN'S NET INCOME $	NO. OF LICENCES
BALDOCK	CONTINENTAL	80,000	56,241	6,820	3,375	3,445	8
GAUER	CONTINENTAL	75,000	22,397	2,090	1,314	746	7
HOLMES & THOMAS	CUTTER	45,000	19,716	1,686	1,183	503	4
LEFTROOK	EXPORT PREMIUM	30,000	27,163	4,335	1,630	2,705	7
MYNARSKI	EXPORT STANDARD	15,000	180	18	11	7	4
RAT	CUTTER	100,000	27,985	2,133	1,679	454	10
WAPISU	CUTTER	30,000	2,110	274	127	147	7
WUSKWATIM	CONTINENTAL	30,000	31,958	6,487	1,918	4,569	10
SEASONAL TOTALS		405,000	187,751	23,845	11,237	12,581	57

Number of local fishermen: 35

*Source: Manitoba Department of Mines, Resources & Environmental Management.
Freshwater Fish Marketing Corporation.

NELSON HOUSE

COMMUNITY INCOME FROM COMMERCIAL FISHING*

SUMMER - 1970

LAKE	WHITEFISH CLASSIFICATION	QUOTA LBS.	HARVEST LBS.	FISHERMEN'S GROSS INCOME $	PRODUCTION COSTS ($0.06/LB.)	FISHERMEN'S NET INCOME $	NO. OF LICENCES
BALDOCK	CONTINENTAL	80,000	50,007	8,248	3,000	5,248	9
GAUER	CONTINENTAL	75,000	49,646	7,148	2,979	4,169	12
LEFTROOK	EXPORT PREMIUM	30,000	25,315	4,677	1,516	3,161	6
RAT (WEST)	CUTTER	45,000	39,501	416	2,370	-1,954	8
WUSKWATIM	CONTINENTAL	30,000	24,778	5,690	1,487	4,203	13
SEASONAL TOTALS		260,000	189,247	26,179	11,352	14,827	48

Number of local fishermen: 46

*Source: Manitoba Department of Mines, Resources & Environmental Management.
Freshwater Fish Marketing Corporation.

NELSON HOUSE

COMMUNITY INCOME FROM COMMERCIAL FISHING*

SUMMER - 1971

LAKE	WHITEFISH CLASSIFICATION	QUOTA LBS.	HARVEST LBS.	FISHERMEN'S GROSS INCOME $	PRODUCTION COSTS ($0.06/LB.)	FISHERMEN'S NET INCOME $	NO. OF LICENCES
GAUER	CONTINENTAL	60,000	45,086	7,392	2,704	4,688	9
WUSKWATIM	CONTINENTAL	40,000	2,335	356	141	215	6
SEASONAL TOTALS		100,000	47,421	7,748	2,845	4,903	15

Number of local fishermen: 13

*Source: Manitoba Department of Mines, Resources & Environmental Management.
Freshwater Fish Marketing Corporation.

NELSON HOUSE

COMMUNITY INCOME FROM COMMERCIAL FISHING*

SUMMER - 1972

LAKE	WHITEFISH CLASSIFICATION	QUOTA LBS.	HARVEST LBS.	FISHERMEN'S GROSS INCOME $	PRODUCTION COSTS ($0.06/LB.)	FISHERMEN'S NET INCOME $	NO. OF LICENCES
BALDOCK	CONTINENTAL	80,000	41,962	6,372	2,518	3,854	10
GAUER	CONTINENTAL	60,000	35,215	6,668	2,113	4,555	11
LEFTROOK	EXPORT PREMIUM	30,000	14,191	3,120	851	2,269	8
SEASONAL TOTALS		170,000	91,368	16,160	5,482	10,678	29

Number of local fishermen: 29

*Source: Manitoba Department of Mines, Resources & Environmental Management.
Freshwater Fish Marketing Corporation.

NELSON HOUSE

COMMUNITY INCOME FROM COMMERCIAL FISHING*

SUMMER - 1973

LAKE	WHITEFISH CLASSIFICATION	QUOTA LBS.	HARVEST LBS.	FISHERMEN'S GROSS INCOME $	PRODUCTION COSTS ($0.06/LB.)	FISHERMEN'S NET INCOME $	NO. OF LICENCES
LEFTROOK	EXPORT PREMIUM	30,000	25,817	3,874	1,550	2,324	9
WAPISU	CUTTER	30,000	3,796	579	229	350	15
WUSKWATIM	CONTINENTAL	40,000	24,987	6,551	1,500	5,051	9
SEASONAL TOTALS		100,000	54,600	11,004	3,279	7,726	33

Number of local fishermen: 27

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*Source: Manitoba Department of Mines, Resources & Environmental Management.
Freshwater Fish Marketing Corporation.

APPENDIX 2 SOCIAL ASSISTANCE DATA

FEDERAL & PROVINCIAL SOCIAL ASSISTANCE PAYMENTS TO NELSON HOUSE RESIDENTS - 1972/73*

Month	Medical	Social	Unemployed Employables	Total
April	$ 4,275	$ 5,358	$ 2,620	$ 12,234
May	5,461	6,373	3,112	14,945
June	5,790	6,580	2,989	15,358
July	5,744	6,859	5,764	18,368
August	5,502	7,093	4,951	17,546
September	5,634	6,485	3,613	15,732
October	7,870	8,866	8,606	25,342
November	5,241	7,087	4,162	16,490
December	10,010	9,556	10,943	30,509
January	6,555	5,437	4,440	16,432
February	5,225	6,054	2,531	13,810
March	7,112	8,021	5,124	20,257
TOTAL	$74,419	$83,769	$58,836	$217,024
%	34%	39%	27%	100%
AVERAGE	$ 6,202	$ 6,981	$ 4,903	$ 18,085

Source: Government of Canada, Department of Indian and Northern Affairs.
Government of Manitoba, Department of Health and Social Development.

FEDERAL SOCIAL ASSISTANCE PAYMENTS - NELSON HOUSE

April 1972 to March 1973*

Month	Medical	Social	Unemployed Employables	Total
April	$ 4,223	$ 4,510	$ 1,479	$ 10,211
May	5,409	5,157	1,970	12,535
June	5,582	5,295	1,818	12,694
July	5,215	5,382	5,411	16,009
August	5,052	4,987	4,847	14,886
September	5,218	5,220	3,263	13,701
October	7,276	7,517	8,133	22,926
November	4,709	5,965	3,972	14,646
December	9,656	8,440	10,586	28,682
January	6,168	4,639	4,239	15,046
February	4,836	5,292	2,324	12,452
March	6,758	6,836	5,053	18,647
TOTAL	$70,102	$69,240	$53,094	$192,436
%	36%	36%	28%	100%
AVERAGE	$ 5,842	$ 5,770	$ 4,424	$ 16,036

Source: Government of Canada, Department of Indian and Northern Affairs.

PROVINCIAL SOCIAL ASSISTANCE PAYMENTS - NELSON HOUSE

April 1972 to March 1973*

Month	Medical	Social	Unemployed Employables	Total
April	$ 52	$ 848	$1,123	$ 2,023
May	52	1,216	1,142	2,410
June	208	1,285	1,171	2,664
July	529	1,477	353	2,359
August	450	2,106	104	2,660
September	416	1,265	350	2,031
October	594	1,349	473	2,416
November	532	1,122	190	1,844
December	354	1,116	357	1,827
January	387	798	201	1,386
February	389	762	207	1,358
March	354	1,185	71	1,610
TOTAL	$4,317	$14,529	$5,742	$24,588
%	18%	59%	23%	100%
AVERAGE	$ 360	$ 1,211	$ 478	$ 2,049

Source: Manitoba Government, Department of Health and Social Development.

NUMBER OF NELSON HOUSE RESIDENTS RECEIVING SOCIAL ASSISTANCE PAYMENTS FROM FEDERAL & PROVINCIAL GOVERNMENTS*

April 1972 to March 1973

Month	Medical	Social	Unemployed Employables	Total
April	146	159	100	405
May	168	189	128	485
June	194	197	104	495
July	185	216	240	641
August	176	176	210	562
September	175	186	146	507
October	252	256	328	836
November	160	207	149	516
December	N.A.*	N.A.*	N.A.*	N.A.*
January	211	149	200	560
February	160	163	116	439
March	222	229	238	689
AVERAGE	187	192	178	557
%	34%	34%	32%	100%
% OF POPULATION	16%	16%	15%	47%

*Not Available

Source: Government of Canada, Department of Indian and Northern Affairs.
Government of Manitoba, Department of Health and Social Development.

NUMBER OF RESIDENTS RECEIVING FEDERAL SOCIAL ASSISTANCE PAYMENTS, NELSON HOUSE*

April 1972 to March 1973

Month	Medical	Social	Unemployed Employables	Total
April	145	131	62	338
May	167	155	95	417
June	193	163	70	426
July	177	181	207	565
August	169	141	193	503
September	168	153	131	452
October	244	223	300	767
November	152	185	126	463
December	N.A.*	N.A.*	N.A.*	N.A.*
January	204	126	182	512
February	153	142	103	398
March	215	200	226	641
AVERAGE (11 Months)	181	164	154	499
%	36%	33%	31%	100%
% OF POPULATION	19%	17%	16%	52%

*Not Available

Source: Government of Canada, Department of Indian and Northern Affairs.

NUMBER OF RESIDENTS RECEIVING PROVINCIAL SOCIAL ASSISTANCE PAYMENTS, NELSON HOUSE*

April 1972 to March 1973

Month	Medical	Social	Unemployed Employables	Total
April	1	28	38	67
May	1	34	33	68
June	1	34	34	69
July	8	35	33	76
August	7	35	17	59
September	7	33	15	55
October	8	33	28	69
November	8	22	23	53
December	7	31	18	56
January	7	23	18	48
February	7	21	13	41
March	7	29	12	48
AVERAGE	6	28	24	58
%	10%	48%	42%	100%
% OF POPULATION	2%	12%	10%	24%

Source: Manitoba Government, Department of Health and Social Development.

APPENDIX 3

THE WILD FUR DEVELOPMENT PROGRAM

During 1973, the Manitoba Department of Mines, Resources and Environmental Management put forward a proposal for a Wild Fur Development Program with the objective of maximizing "the social and economic benefits of trappers from optimum development of the wild fur resource."[1] In its introduction, the underutilization of Manitoba's wild fur resources is discussed and a number of specific problems cited. The Manitoba Government's natural resource policy stating that utilization of local resources must be consistent with increased opportunity for rural and northern residents to stay in their home communities is mentioned as a major justification for the program. This statement leads to the contention that the program must have substantial local participation in all phases of its development. A final point of note is that the program will be directed toward commercial utilization of the wild fur resource as opposed to recreational utilization.

THE PROGRAM

The program is to be co-ordinated by a fur specialist responsible to the Chief of Wildlife Programs, Development and

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[1] Wild Fur Development Program, Manitoba, Draft #5, Department of Mines, Resources and Environmental Management, September 1973.

Extension, Department of Mines, Resources & Environmental Management. A fur manager would be appointed for each resource management region to co-ordinate the program within each region and to facilitate trapper participation in the program. Trapline officers and other Mines, Resources & Environmental Management staff will provide inputs as required.

Local trapper participation in the development, implementation and operation of the program is and will continue to be facilitated through the Manitoba Registered Trappers' Association (MRTA), and its relevant Local Fur Councils. The MRTA is responsible for the operation and administration of local fur depots, a humane trap exchange program, seasonal financing ("grubstaking"), recommendation of capital loans and grants to trappers and, in consultation with the fur specialist, the development of programs to alleviate social and physical conditions which may tend to adversely affect trapping. The stated intention of this substantial involvement of local trappers and their Association is that, over time, Government control and direction would be reduced in favour of increased control by the local fur councils and the MRTA.

The operation of local fur depots is an attempt to ensure a more direct access to fur markets and, hence, the possibility of higher returns to the trapper. Further, local control of these facilities will provide more local employment and an opportunity to develop management skills within each community.

THE PROGRAM'S RELATIONSHIP TO MITIGATION OF MANITOBA HYDRO DEVELOPMENT

The discussion of compensation and development contained in the "Framework and Study Approach"[1] points out that it is desirable to ensure that lifestyle options remain after hydro development. One option is the traditional lifestyle associated with trapping, fishing and hunting activities. Further, it is Manitoba Government policy to utilize, wherever possible, existing programs to achieve the above aim. The Wild Fur Program can be viewed as being within this context. As such, the acceleration of program implementation with particular emphasis on the local inputs of the various community fur councils appears to be one development mechanism which is available. It is felt that this action would contribute to the orderly adjustment of the affected R.T.L. sections, particularly in the vicinity of Cross Lake and Nelson House and, hence, tend to ensure the maintenance of trapping as a lifestyle option available to residents of the remote northern communities analyzed in this study.

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[1] See the final report, pp. 60-114.

APPENDIX 8 - VOL. 2 - C
SOCIAL AND ECONOMIC IMPACT OF THE NELSON RIVER HYDRO DEVELOPMENT
(WITH EMPHASIS ON SOUTH INDIAN LAKE)

SOCIAL AND ECONOMIC IMPACT OF THE NELSON RIVER HYDRO DEVELOPMENT (WITH EMPHASIS ON SOUTH INDIAN LAKE)

by

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The Social and Economic Impact Study Team
Planning Branch
Manitoba Department of Mines, Resources and Environmental Management
Winnipeg, Manitoba
June, 1973

for

THE LAKE WINNIPEG, CHURCHILL AND NELSON RIVERS STUDY BOARD

SPECIAL NOTE

THE CONCLUSIONS AND RECOMMENDATIONS CONTAINED IN THIS APPENDIX ARE THOSE OF THE AUTHOR(S) AND ARE NOT NECESSARILY THE SAME AS THE CONCLUSIONS AND RECOMMENDATIONS OF THE LAKE WINNIPEG, CHURCHILL AND NELSON RIVERS STUDY BOARD AS EXPRESSED IN THE SUMMARY REPORT AND THE TECHNICAL REPORT.

PREFACE

This paper is one of a series of technical reports prepared or initiated by the Social and Economic Impact Study Team as background to a report entitled, Social and Economic Impact Study, Churchill and Nelson Rivers Study.

The purpose of the impact study is to identify the potential social and economic impacts of hydroelectric power projects on remote northern Manitoba communities, and to recommend mitigation and development measures.

Technical reports examining the social and economic characteristics of each community within the study area provided a baseline against which to formulate conclusions and recommendations. A brief summary of these community profiles appears in the general report. This paper differs from the others in a few important aspects. First, the paper was written approximately one year ago and is, therefore, out of date in some respects. Second, a large number of initiatives involving mitigation and development issues have been undertaken since this paper was completed. No attempt has been made to include these actions here. However, the summary contained in the general report does provide information concerning these recent developments.

Notwithstanding these shortcomings, it is felt that this paper is useful in that it provides a detailed account of information and data concerning South Indian Lake. This material has served and will likely continue to serve as an input into future development planning in this area.

J. D. Collinson,
Assistant Deputy Minister,
Department of Mines, Resources
and Environmental Management.

June, 1974

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INTRODUCTION

INTRODUCTION

BACKGROUND:

The initial plan for diverting the Churchill River into the Nelson was to raise the level of Southern Indian Lake 35 feet. This "high level diversion" was neither socially nor politically acceptable because it would dislocate certain residents, including the entire community of South Indian Lake and cause considerable environmental damage. The decision now has been made (and controversy still exists) to divert the Churchill River by raising Southern Indian Lake 10 feet. The community at South Indian will be affected but will not have to be relocated as would have been the case under the original plan.

Following this decision, Canada (Environment Canada) and Manitoba (Department of Mines, Resources and Environmental Management) signed a joint study agreement to assess the impact of the diversion as well as Lake Winnipeg Regulation. This Agreement, in addition to various engineering, biological, surveying and geological studies, specifically provides for studies on:

> "1. Project Impact - as required to assess the local impact in social and economic terms of the works, including the effects on employment, wage rates, transient population, trade, accessibility, mobility and communications, to consider and propose means of ameliorating any undesirable effects on the people of the communities in the area.
>
> 2. Potential Opportunities - as required to determine means by which the people of the region can, in both the short and long term, obtain the greatest advantage from the social and economic opportunities resulting from construction of the works and associated developments."

All other studies required by the Agreement except for the social and economic impact analysis are now underway. This preliminary report is designed to provide a basis for establishing both a compensation and a development process which can be built upon as change occurs, potential develops and further data collection and analysis is carried out.

I Provincial Water Management Decisions

(a) Manitoba Hydro has been issued a licence to regulate lake Winnipeg between 711 and 715 A.S.L. and is proceeding with channel improvements in the Playgreen Lake area and a control/generating facility at Jenpeg on the west branch of the Nelson River where it enters Cross Lake.

(b) Manitoba Hydro has been issued a licence to divert not more than 30,000 cfs. of water from the Churchill into the Nelson River. A minimum of 500 cfs. during open water and 1500 cfs. during the ice cover period must be released down the lower Churchill from a control structure to be developed at Missi Falls. This structure will raise Southern Indian Lake to 847 A.S.L. with a maximum permissible level of 850 A.S.L.. Once Southern Indian Lake is in operation as a reservoir, the maximum draw-down or fluctuation permitted in any 12-month period will be two feet.

II Communities Affected

In varying ways and degrees, the settlements of South Indian Lake, Nelson House, Cross Lake, Norway House and Churchill (and perhaps Split Lake and York Landing) will be affected by the Manitoba Hydro development program. In addition, the traditional livelihood of residents of other communities (eg. fishing and trapping) may be somewhat affected. Gillam, of course, has already experienced a major change with the construction of the Kettle Rapids generating station and the present construction activity at Long Spruce. In time, consideration will have to be given to the future of Gillam once the construction schedule has been completed.

III Various Effects on Settlements are Possible

Obvious effects include those shorter run tangible (and visible) cases where docks might be flooded or lifted by ice, houses, sheds or fish stations inundated, traplines flooded or cleared, fish nets snagged or fowled by debris, changing currents, etc. Such physical effects can, by and large, be anticipated and monitored. Other short term effects are less easily identifiable. For example, possible uncertainties in the minds of residents regarding the actual impact can create stress and social tensions that could become manifest in a variety of ways.

Heavy construction activities nearby suddenly remove much of the remoteness that previously may have existed. New job opportunities develop but many necessary skills cannot be immediately acquired by local residents and the jobs may go to outsiders. For both those who work in these new jobs as well as those who observe them, an awareness develops of an economic system previously often encountered only on a sporadic basis -- a wage economy with many new implications for lifestyle including more and different individual, family and community decision-making requirements. New standards of facilities are observed (including housing, sewer and water systems) which might affect aspirations not only of individuals but of communities. Usually, construction camps are predominantly male populated which places tremendous stress on the female population of nearby settlements and, subsequently, often on the entire community. Stress, in combination with improved access (and sometimes money) often can lead to alcohol based problems as well as various forms of social stratification and intercommunity tension. Rapidly increased recreation pressures (including hunting) can drastically reduce the supply of "bush" food available thereby creating demand for expensive replacements.

Long term effects depend largely on the net effects of the change in water levels and/or flow as compared to what the situation would have been without the change. Notwithstanding this simple logic, there will be many who will "blame" or try to blame all apparent downward trends on the Hydro development even if these trends would have occurred anyway. Critical factors over the long run are;

1) available and acceptable sources of livelihood and

2) community decision-making processes capable of handling changes both predictable and unpredictable during and following attainment of a new water regime.

It is significant, that in a Literature Review carried out by Acres Consulting Services related to relocation (although community relocation will not be necessary in either regulation or diversion), the following conclusions were noted as guidance:[1]

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[1] Acres Consulting Service, "Literature Review - Socio-Economic Impact Pertaining to Native People", February 1, 1973, p. 3 & 4.

a) "Communities usually suffer major problems after relocation -- however, these problems are not necessarily due to relocation; relocation thus serves to aggravate, rather than create problems -- with the possible exception of very isolated communities, where relocation can dangerously accelerate the rate of adjustment.

b) Analysis must evaluate effects upon economic activity, including the projected growth in potential native labour force, traditional native employment and opportunities for new native wage employment.

c) Severe problems have occurred even where communication, consultation, and some form of joint decision-making have taken place; communication *per se* does not remove the need for effective planning, combined with acknowledgement of the many unknown risks and human problems inherent in current native transition and adjustment."

In addition, Acres notes the following needs from an analysis of the James Bay Project:[1]

a) The need to utilize cost/benefit analysis, regional economic planning analysis, and demographic projection analysis as the basic techniques for evaluation of socio-economic impact -- even with these techniques, there is great difficulty in determining the *net* effects of the project;

b) Within the socio-economic analysis the need to examine the following:

  - different trends in subsistence *vs* wage economies
  - different population age, education groups within native community
  - critical importance of income-in-kind generated by subsistence activity (eg. "income" from food that is obtained by hunting and fishing)
  - employment opportunities created by the project should be evaluated by major skill categories
  - multiplier employment opportunities, as well as direct employment opportunities must be evaluated

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[1] Acres Consulting Service, "Literature Review - Socio-Economic Impact Pertaining to Native People", February 1, 1973, p. 2.

c) An appropriate goal of this type of socio-economic analysis is to provide targets concerning long term planning of native manpower in order to move toward a viable and pleasant society after the project is constructed; a small proportion of direct construction jobs can be expected to go to natives -- the major new native job opportunities normally will be in the expanded non-project service sector; specified training and education programmes are required; concern must be directed toward assuring native involvement in the decision-making process, and in ownership and operation of service sector enterprises, (eg. tourism, housing construction, retail outlets, etc);

d) Regardless of the existence of a Hydro project, basic problems exist for native communities as their economic base changes (eg. problems associated with increased urbanization, increased contact with outsiders, increased desire and need for wage work, changes in school needs);

e) It is important to evaluate interaction within a project region between different types of towns, and between the towns and their hinterland -- the report comments at length upon the inadequacy of current planning which ignores native values and opportunities associated with urban development (eg. the role of small marginal industries, shack towns, squatters, etc.);

f) There is a need for communication and discussion with native communities; however, native communities are frequently dissatisfied with the type of information presented in socio-economic impact analysis -- this analysis is designed for planning purposes, and fails to provide the variety of specific details requested by native communities.

In general, these are useful suggestions for this particular study and cover many of the areas of analysis and concern pertinent to the social and economic impact of Lake Winnipeg Regulation and the Churchill River Diversion. In addition, however, the decision-making mechanisms of the communities have been considered as a significant factor in accommodating change.

Chapter I

SUMMARY, CONCLUSIONS
and
RECOMMENDATIONS

1. NORTHERN DEVELOPMENT IN GENERAL

A) SUMMARY AND CONCLUSIONS

The effects of Hydro developments in the North cannot be considered in isolation of the general process of change which has been occurring in the remote communities of Manitoba's North in recent years. The Northern Affairs Act with its implications for increased and improved municipal-type services including a community-council type local government; the adjacent industrial developments in mining and forestry; the resultant development of new, modern towns; the increasing accessibility through winter roads, air strips and scheduled air flights; and the increased level of government programs and services have all served to move remote communities of ten years ago into a process of transition today.

As a result of the "north" and the "south" becoming more aware of each other, the disparities have been accentuated and the responsibilities of senior governments (federal and provincial) have been accentuated. The need for local services such as housing, electricity, roads, air strips, safe water supply, sewage, garbage disposal, education and health and perhaps more importantly, the need for employment opportunities and greater community responsibility in decision-making, have been surfacing as a result of these changes. Hydro development has become a catalyst causing these needs to surface far more quickly than might otherwise have been the case.

B) RECOMMENDATIONS

Recognizing this general need throughout the North, it is recommended that:

i) A Northern Development fund be established to deal with these general needs and disparities (this fund might have both federal and provincial contributions).

ii) Technical assistance be made available to Community Councils for the development of decision-making, problem-solving, communications and community life skills.

iii) "Developer" roles and responsibilities be clarified and made known (because many activities, public and private, affect communities) so that all potential developers are aware of their responsibilities regarding compensation for effects on infrastructure, livelihood and lifestyle, and local employment, and manifest a respect for cultural differences, local authority, community decision-making and communication processes, etc.

iv) A resource and northern development strategy be developed for review and discussion with all interested parties but most particularly for discussion with each of the northern Community Councils as well as potential "developers" including federal and provincial agencies.

v) Beginning immediately, all activities affecting northern settlements be related to these settlements through the extension service of the Department of Northern Affairs so that communities achieve a better understanding about what is going on; in addition, the concerns of Councils about employment, clean-up, location of facilities, etc., be given very careful consideration as projects are implemented.

2. THE COMMUNITY OF SOUTH INDIAN LAKE

A) SUMMARY AND CONCLUSIONS

The Community of South Indian Lake is in the position of being affected by both the Hydro development and the externalities outlined above. Because of this, the task of this study group became one of developing an understanding of the lifestyles and decision-making processes of the community in order that programs that may be conceived and implemented are administered in a manner sensitive to the community's needs.

THE ECONOMY[1]

The economy of South Indian Lake serves as a base in understanding the lifestyle of the community.

In 1972 the community income of South Indian Lake was $538,800 while the average income per person in the labor force was $4,176 (excluding income of "transient residents" such as teachers, but including values placed on products from the land.

The fishery provided $235,100 (43%) of community income; trapping $21,600 (4%); hunting $41,000 (8%); forestry $17,500 (3%); construction $25,300 (5%); service industries $15,000 (3%); and government $183,200 (34%). The government payments consisted of $35,000 in wages[2] and $148,200 in transfer payments.

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[1] For more detail, see Chapter IV.

[2] This probably understates the situation because recent construction activity (air terminal, housing, etc.,) will result in this figure being considerably higher over the next few years.

The traditional economic components of fishing, hunting, trapping and wood cutting provided 37% of the community income. Wages provided 35% of incomes with 60% of wages coming from the fishery. Government transfer payments made up the other 28% in the form of social assistance, old age pensions and family allowances.

At the present time, it is possible to maintain the traditional lifestyles. However, lifestyles are evolving due to influences both within the community and outside of it (eg. population increase, new ideas, aspirations of youth, etc.). As a result, the present community lifestyle will no longer be possible nor desired in 1990, but individual present lifestyles for some will be possible if they so choose.

Since the catalytic effect of the Hydro development has a potential to force a very rapid, uncontrolled change in lifestyles, those individuals who wish to maintain their present lifestyles can be assisted to do so and those individuals who wish to change their lifestyles can be assisted to adapt to and direct change rather than be directed by it.

COMMUNITY LEADERSHIP AND DECISION-MAKING[1]

The community leadership and decision-making patterns over the past ten years have evolved from relatively simplistic ones involving key influential family heads and the free trader -- to an elected Community Council playing the dominant role in a much more complex system of fairly recent community institutions. Within this pattern, certain specializations have developed from necessity (eg. Fisheries Co-op). The traditional decision-making process of delaying decisions until a consensus is reached appears to be the preferred style, but this style is inadequate in instances where consensus cannot be reached before decisions are necessary; - decisions made necessary by the rapid change going on all around. The community must be in a position to be able to direct this change through their internal leadership rather than be directed by it.

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[1] For more detail, see Chapter VI.

B) RECOMMENDATIONS

i) The residents of South Indian Lake need to be able to choose their economic lifestyle rather than have change imposed upon them for economic reasons caused by the regulation of Southern Indian Lake[1]. If they choose to preserve their present way of life, or if some wish to change their means of earning a livelihood and hence their lifestyle, they should be assisted to choose from a number of possible "income" alternatives. Considerable potential appears to exist in the traditional activities (fishing and trapping) but new resource development program emphasis will be required if the potential is to be realized.

ii) It is recommended that a planning process be initiated in consultation with the community and all agencies involved to ensure that a viable fishery for the residents of South Indian Lake exists after the water of the lake is regulated[2]. This could include a linear programming model to compare alternative plans of operation and their financial implications. In addition, this study will determine the most feasible method of operation for the Co-operative under present conditions and will provide insights for fishery operations in all of Manitoba.

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[1] This is similar in concept to the "stay option" outlined in "Guidelines for the Seventies".

[2] For detail, see Chapter IV and Appendix B .

iii) It is recommended that planning processes be initiated in consultation with the community to ensure access to the potential income available from trapping after water regulation. These plans need not necessarily be concerned with increasing the numbers of water based furbearers but could consider improving access to traplines, improving or building new trappers cabins, constructing fur depots and so forth. The fur plan prepared by the Department of Mines, Resources and Environmental Management provides information on how the returns to trappers and fur production can be increased.

iv) Since hunters from outside the community may take a significant number of moose, otherwise available for food, it is recommended that game laws in respect to such hunting be strictly enforced. A more severe alternative is to prohibit hunting to non-community residents in the area surrounding South Indian Lake.

v) There is an apparent need for the Community of South Indian Lake to learn new decision-making techniques, new or improved problem-solving communications and community life skills. Therefore, it is recommended that the Department of Northern Affairs negotiate with the Manitoba Human Relations Institute with a view to contracting with the Institute to initiate a development process in South Indian Lake as soon as possible.

vi) The community has been bombarded by both the number and complexity of decisions required. Therefore, it is recommended that government declare a moratorium on new government initiated activities that are liable to cause stress or have a negative impact at this time, for a period of at least three months. This period would provide the community and its decision-makers with a breather during which time it could sort out the information it has, separate the relevant information from the irrelevant, distinguish "fact from fancy", and generally consolidate its position. The moratorium would be a period during which the community would not be expected to dissipate additional energy on new decisions other than those related to development processes and others which might be initiated by the Community Council.

vii) Given the apparent current state of confusion and resultant mistrust which has developed concerning the Hydro development, it is recommended that:

1) The community of South Indian Lake be involved in determining what its current level of information and knowledge is;

   a) about its position in change and development in the north generally,
   b) about the implications, etc., of the Hydro development project particularly.

2) That to facilitate (1) a comprehensive factual information document be compiled in popular language similar to but more comprehensive than "Some Facts About the Town Plan for South Indian Lake", prepared by Research and Planning, Department of Northern Affairs. The document should indicate where information is tentative and/or subject to change, and make provision for updating at regular intervals.

3) That to facilitate (1) and the use of (2), the community be assisted to understand, interpret and internalize (integrate) the information.

viii) That the social research initiated by this study be continued using an action-research model design that would:

a) reinforce the client participation in research and action programs that is implicit in such a model of social intervention in the life of a community,

b) develop an effective information-communication process between the community and the world outside,

c) contrive to achieve mutual understanding between the community and the world outside in their dealings with one another,

d) make provision to research existing relevant literature both for its application to the South Indian Lake situation and with a view to updating the literature and adding to it through analyses of the South Indian Lake situation.

ix) It is recommended that an action-research program similar to this report as well as the further work proposed for South Indian Lake be initiated immediately for the communities of Nelson House, Cross Lake and Norway House in order to determine preferred lifestyles and to set up an information-communication process.

3. COMPENSATION

A) SUMMARY AND CONCLUSIONS

POLICY ASSUMPTION: IT IS ASSUMED THAT, WHATEVER THE EFFECTS MIGHT BE, COMMUNITIES AND INDIVIDUALS OR FAMILIES WITHIN THEM SHALL BE COMPENSATED TO MAKE THEM AT LEAST AS WELL OFF AS THEY WOULD HAVE BEEN WITHOUT THE PROJECT.

Given the concomitant changes which are occurring, the net result i.e., a quantifiable estimate of the Hydro development is difficult to prejudge. However, a qualitative description of some of the impacts directly attributable to the Hydro development can be made. These social and economic impacts will vary by a number of factors; by the stage of construction, by the nature of the community, and by the character of the individuals living in the community.

a) Impacts by stage of construction:

STAGE I - project announced but no construction - concern re what will happen and how it will affect them, i.e., mental anguish, frustration and stress, etc.

STAGE II - during construction - lifestyles begin to be affected by destruction of traplines; new types of jobs; wages vs subsistence; hunting by outsiders take game (moose, etc.) and could result in less "bush" food for residents; new facilities at construction camps; further mental frustration regarding further consequences; and potential stress on community leadership and power structure.

STAGE III - after construction and during water level or flow changes - construction camps and jobs phased out; some men go back to subsistence economy but families may have been living on "store" food - may have become more accustomed to "consumer" economy; docks, sheds, some homes may be inundated; currents change; ice changes; navigation channels change; further mental anguish re what will ultimately happen, eg., possible loss of fishing grounds, debris in nets, will beaver and muskrat re-establish, etc.

STAGE IV - new water "equilibrium" reached with regulation/diversion - a new situation reached to which adjustments/adaptation must be made re economy (changes re fishing/trapping); lifestyles (construction and rapid exposure to change and stress will have had permanent effects); community infrastructure; and community decision-making processes. Compensation for damage in itself will have effects depending on how it is handled.

b) Impacts by the nature of community

- Each community will be affected differently both because the physical impact will not be identical in each case and because communities differ from one another in terms of leadership and power systems, economic activity, and physical setting (including many not directly on the water system but whose residents may fish or trap along it).

c) Impacts by the character of individuals

- Like anywhere else, each northern resident is a unique individual and therefore, each one will be affected somewhat differently. Most obviously, however, will be those whose trapping or fishing activities are affected as well as those whose docks, sheds, etc., are flooded. Less obvious effects, but nonetheless significant, will be the rapid social change surrounding all residents, stress on leadership and power systems.

COMPENSATION PRINCIPLES

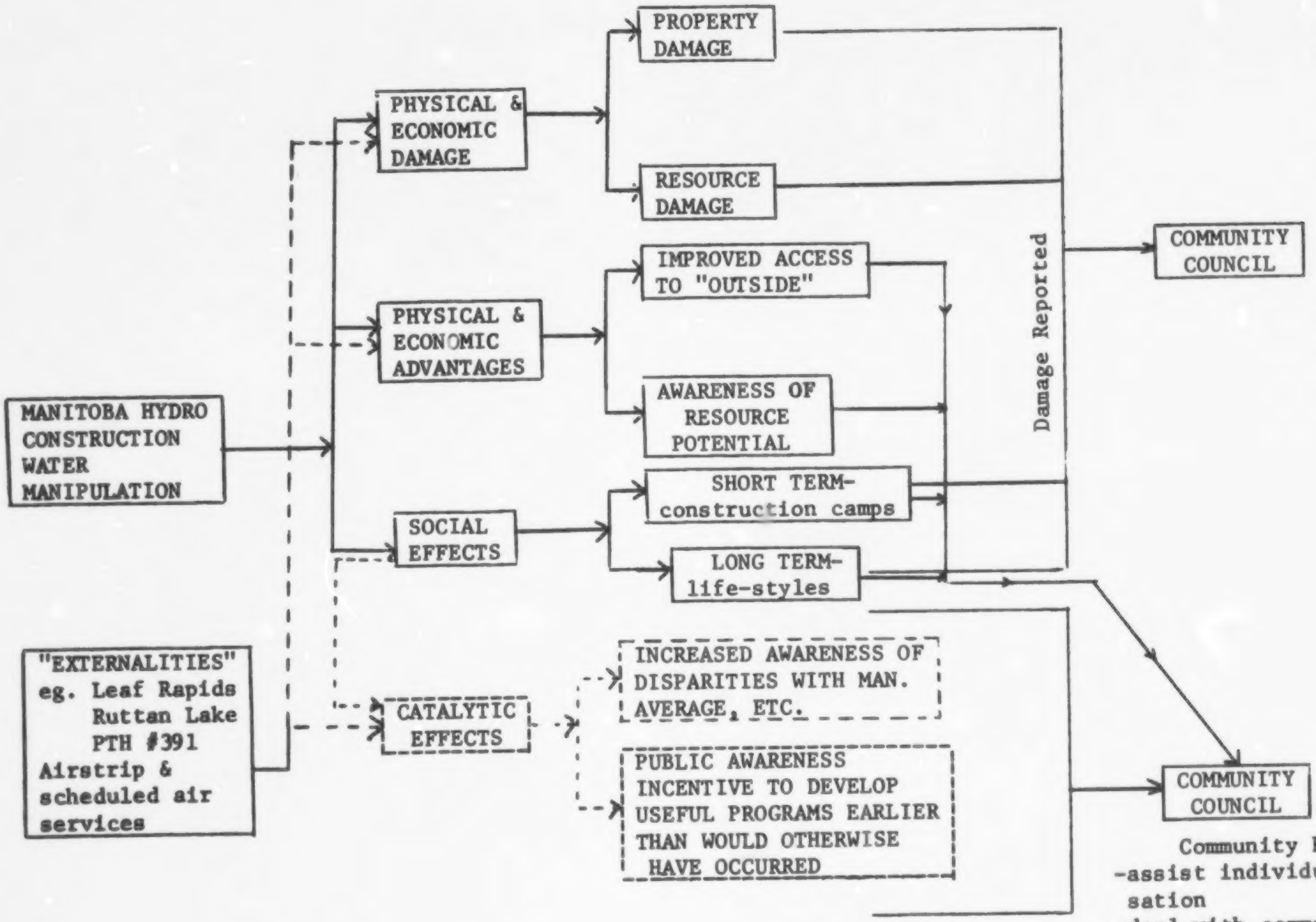
- Beyond compensation for those direct effects on livelihood and infrastructure, some consideration would appear justified in recognition of the catalytic role played by the Hydro development and the fact that, even though change is inevitable and being nurtured by other externalities, Hydro will be seen to be the "cause" and this perception appears to be so strong that it represents a significant fact. This consideration or compensation should not seriously upset present power patterns and leadership systems, (this occurred at Easterville with the effective removal of the free trader as a key component of the decision-making system and can be cited as one of the major causes of the many problems still being faced by the community), should provide for incremental decision-making by the community rather than a whole set of decisions all at once, and should provide full decision-making authority to the communities and/or their organizations (eg. Fisheries Co-op). Under no circumstances should key leaders be hired for outside positions even if they are related to compensation programs, for by so doing, a leadership process is subverted and community morale broken.

Further, compensation should not be reduced on account of benefits expected to accrue in the future -- the same persons affected by damage might not benefit, or not in proportion to damage they experience.

COMPENSATION - SEE DIAGRAM I FOR TYPES OF SOCIAL & ECONOMIC IMPACT

a) It is recommended that compensation be given careful consideration where damage has occurred as a result of any of the four stages mentioned earlier. It is impossible, at this time, to place a cost figure on the compensation required because various potential changes have not yet been calculated (some estimates may be possible when results of various projects under the Study Board are available and in some cases actual damage may not be known until it occurs -- hence, the necessity of adequate social and economic benchmark data. This uncertainty as to total compensation cost is bound to make the "developer" uneasy because it could be many years before the actual project costs can be determined. On the

DIAGRAM I


MANITOBA HYDRO
CONSTRUCTION
WATER
MANIPULATION
"EXTERNALITIES"
eg. Leaf Rapids
Rutton Lake
PTH #391
Airstrip &
scheduled air
services
PHYSICAL &
ECONOMIC
DAMAGE
PHYSICAL &
ECONOMIC
ADVANTAGES
SOCIAL
EFFECTS
CATALYTIC
EFFECTS
PROPERTY
DAMAGE
RESOURCE
DAMAGE
IMPROVED ACCESS
TO "OUTSIDE"
AWARENESS OF
RESOURCE
POTENTIAL
SHORT TERM-
construction camps
LONG TERM-
life-styles
INCREASED AWARENESS OF
DISPARITIES WITH MAN.
AVERAGE, ETC.
PUBLIC AWARENESS
INCENTIVE TO DEVELOP
USEFUL PROGRAMS EARLIER
THAN WOULD OTHERWISE
HAVE OCCURRED
Damage Reported
COMMUNITY
COUNCIL
COMMUNITY
COUNCIL

Community Role
- assist individuals re compensation
- deal with community compensation
- deal with change ("progress"); new, more & more complex decisions
- deal with outside agencies

other hand, the residents in the communities don't know what damage is likely to occur either and must be assured that compensation will be arranged for whatever damages occur whenever they occur even if the total cost happens to exceed any estimates that are made. In other words, the residents must be compensated for any negative effects caused by the developer.

b) Compensation will fall into three major categories:

   1) damage to livelihood - generally affects individuals but may also affect community by changing the availability of "bush" food, etc. Examples of the need for immediate compensation have already occurred in the form of damage to traplines in the Jenpeg, South Bay-Notigi and Missi Falls areas and temporary conveyor facilities required at the new Loon Narrows fish station until the lake is raised and arrangements for a permanent conveyor can be made.

   2) damage to infrastructure - in addition to docks, it is estimated that between five and thirty houses at South Indian Lake will be affected by flooding or shoreline slumping. The wide variation is due to the difficulty in estimating the amount of shoreline slumping that will occur. In addition, arrangements will be necessary to compensate for effects on navigation and winter travel over the ice -- especially within the community.

   3) effects on the community generally - in addition to those outlined previously, include stress on the decision-making mechanism both in terms of the number of decisions to be

as well as the complexity of these decisions. Assistance in improving decision-making skills is required as well as adequate time for decision-makers to deal with issues on their own terms. Implicit in this is the assumption that financial capacity to implement their decisions would be available.

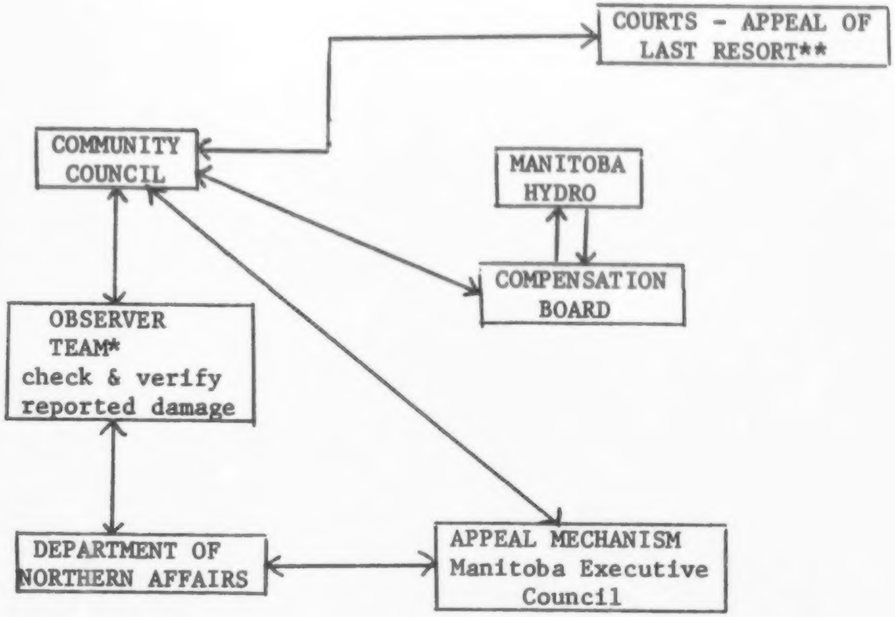
COMPENSATION PROCESSES - SEE DIAGRAM II

a) It is recommended that a Compensation Board be established immediately to deal with mitigation. This Board would be appointed by the Province and consist of members who, as a group, are able to reflect and understand the roles and needs of both the developer and the communities affected.

b) It is recommended that an "observer team" consisting of two people -- one appointed by the Community Council and one by the Department of Northern Affairs -- be appointed to check out all claims by residents of the community and report their findings to the Council and the Department of Northern Affairs for settlement with Manitoba Hydro through the Compensation Board. Costs and salaries of this team would be a logical charge against the "developer".

c) It is recommended that discussions be instituted with the community with a view to establishing an administrative process that would include a mechanism for the less immediate, longer range development measures. Various administration models might be examined including in order of preference of what would appear to this study group to be most appropriate:

DIAGRAM II


COURTS - APPEAL OF LAST RESORT**
COMMUNITY COUNCIL
MANITOBA HYDRO
COMPENSATION BOARD
OBSERVER TEAM* check & verify reported damage
DEPARTMENT OF NORTHERN AFFAIRS
APPEAL MECHANISM Manitoba Executive Council

---

*One representative appointed by Community Council, one by Department of Northern Affairs.

**Last resort only because many of the issues may be moral ones rather than legal ones because the principles of behaviour to be conformed with in matters such as these are still being argued out politically and have therefore not yet been set down in law.

- A specific administrative line function in Northern Affairs for matters pertaining to the Churchill River Diversion with an advisory group of Community and Manitoba Hydro representatives. (SEE DIAGRAM III).

- A Labour Management Model, i.e., an Authority consisting of a community recommended appointee, a government appointee and a third person -- to be Chairman -- who is mutually acceptable to the Community and to Government.

- A Grand Rapids Forebay Committee type model.

- The Nelson Agency Model.

(These are indicated in greater detail in Appendix I)

c) An appeal mechanism is an essential element of any compensation process, and although the Courts must be recognized as one logical forum for appeal, they might be regarded as an appeal of last resort. The reason for this is that the concept of compensation for intangibles such as lifestyle change is largely a moral issue where the principles of behaviour to be conformed to are still being discussed and debated politically and have, therefore, not yet been set down in Law. Precedents are in the process of evolution. Hence, an appeal through the Courts would be a lengthy and probably frustrating experience for a community. Therefore, the realistic first appeal mechanism is the Manitoba Executive Council, possibly through the Minister of Northern Affairs.

DIAGRAM III

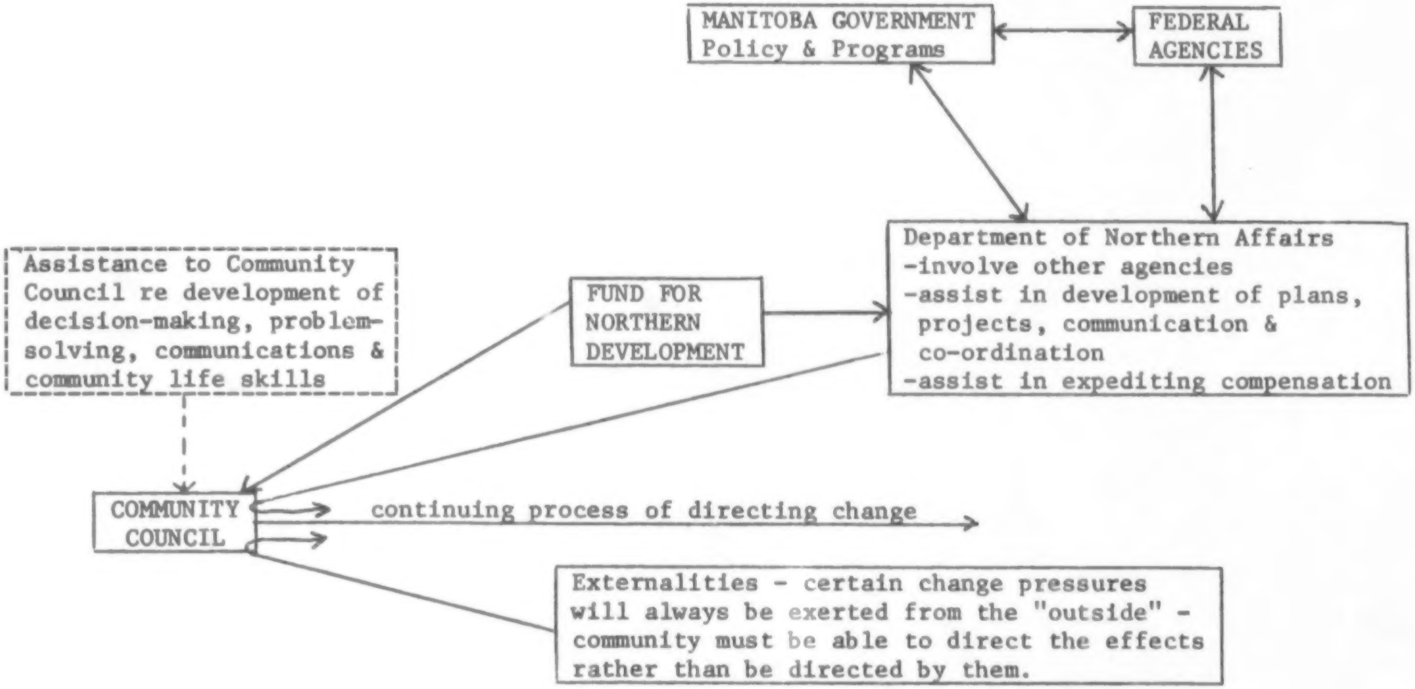
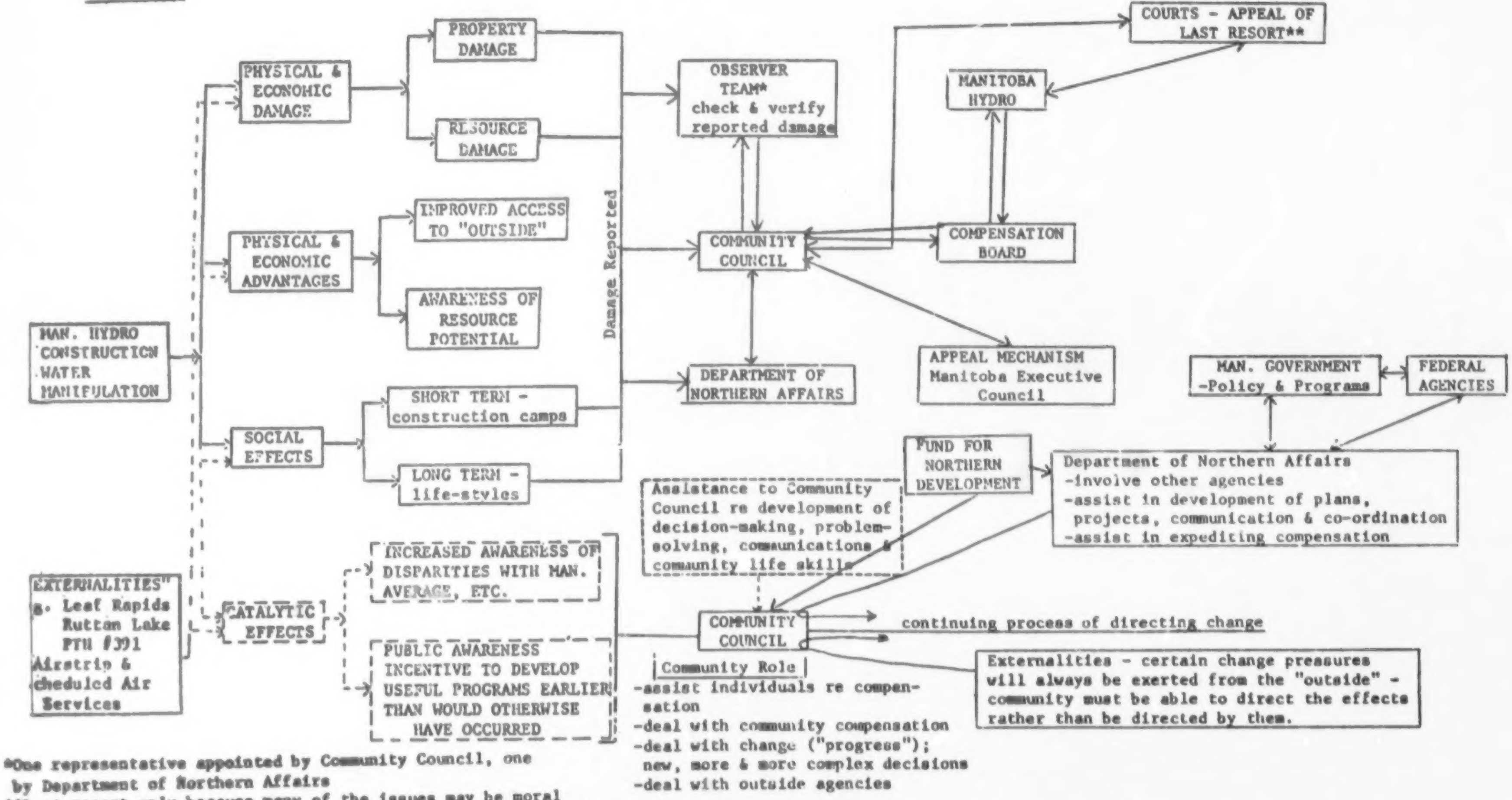

MANITOBA GOVERNMENT
Policy & Programs
FEDERAL
AGENCIES
Department of Northern Affairs
-involve other agencies
-assist in development of plans, projects, communication & co-ordination
-assist in expediting compensation
FUND FOR
NORTHERN
DEVELOPMENT
Assistance to Community Council re development of decision-making, problem-solving, communications & community life skills
COMMUNITY
COUNCIL
continuing process of directing change
Externalities - certain change pressures will always be exerted from the "outside" - community must be able to direct the effects rather than be directed by them.

DIAGRAM IV


MAN. HYDRO CONSTRUCTION WATER MANIPULATION
EXTERNALITIES"
g. Leaf Rapids
Ruttan Lake
PTH #391
Airstrip &
cheduled Air
Services
PHYSICAL & ECONOMIC DAMAGE
PHYSICAL & ECONOMIC ADVANTAGES
SOCIAL EFFECTS
CATALYTIC EFFECTS
PROPERTY DAMAGE
RESOURCE DAMAGE
IMPROVED ACCESS TO "OUTSIDE"
AWARENESS OF RESOURCE POTENTIAL
SHORT TERM - construction camps
LONG TERM - life-styles
INCREASED AWARENESS OF DISPARITIES WITH MAN. AVERAGE, ETC.
PUBLIC AWARENESS INCENTIVE TO DEVELOP USEFUL PROGRAMS EARLIER THAN WOULD OTHERWISE HAVE OCCURRED
Damage Reported
OBSERVER TEAM* check & verify reported damage
COMMUNITY COUNCIL
DEPARTMENT OF NORTHERN AFFAIRS
MANITOBA HYDRO
COMPENSATION BOARD
COURTS - APPEAL OF LAST RESORT**
APPEAL MECHANISM Manitoba Executive Council
MAN. GOVERNMENT -Policy & Programs
FEDERAL AGENCIES
FUND FOR NORTHERN DEVELOPMENT
Department of Northern Affairs
-involve other agencies
-assist in development of plans, projects, communication & co-ordination
-assist in expediting compensation
Assistance to Community Council re development of decision-making, problem-solving, communications & community life skills
COMMUNITY COUNCIL
continuing process of directing change
Community Role
-assist individuals re compensation
-deal with community compensation
-deal with change ("progress"); new, more & more complex decisions
-deal with outside agencies
Externalities - certain change pressures will always be exerted from the "outside" - community must be able to direct the effects rather than be directed by them.

*One representative appointed by Community Council, one by Department of Northern Affairs

**Last resort only because many of the issues may be moral ones rather than legal ones because the principles of behaviour to be conformed with in matters such as these are still being argued out politically and have therefore not yet been set down in law.

STAGE II CONSTRUCTION

EFFECTS	MITIGATION/AMELIORATION OPTIONS	NEW POTENTIALS
During construction -		
Lifestyles begin to be affected by destruction of traplines;	-arrange for immediate compensation and advise communities on other activities that might have similar effects to discuss how best to deal with them	
Anything negative that happens in community is attributed to the development project and tends to aggravate an already vexing situation eg. the construction of local hydro distribution system played havoc with local road system	-encourage and assist Council to exercise appropriate controls over such incidents	
Through the process of "selective exposure" the people tend to identify with information and communication that agree with a position they already hold, eg. the people believe that government did not make good on its "promises" to the people in the Grand Rapids Forebay.	-ensure that information that is provided is discrepant enough to a position people hold and presented in such a way, as to lead to a change in attitude; but not so discrepant, or in such contrast to the people's position, as to be conveniently refuted by them.	
People react to the anguish of uncertainty. Anxiety and apprehension abounds. Inadequate information is poorly communicated and tends to reinforce negative attitudes.	-prepare a Government/Hydro communique that will state the position. Keep it current! Design communication inputs to deliver the message in a two-sided fashion.	
	-negotiate a Memorandum of Understanding or intent using the Labour-Management Model - providing for recourse to arbitration on particular points or issues as/if necessary.	

STAGE II CONSTRUCTION (continued)

EFFECTS	MITIGATION/AMELIORATION OPTIONS	NEW POTENTIALS
	-meet the need for information and communication workshops for at least provincial government people who, formally or informally, take various bits and pieces of information to the community. The Community Council should be invited to participate in these workshops as should Federal Government and Hydro employees who relate directly to the community.	
New types of jobs;	-give those affected first right of refusal on new jobs or training programs i.e., "veteran's preference", ensure that local students are given preference in summer student type of jobs eg. research and monitoring, etc.	-new sources of jobs and income available for those interested -- training and orientation to work styles and adjustments in employer practices might be considered.
Wages vs. subsistence;	-home and family counselling re budgeting, purchasing, cooking/diets, etc. Also orientation for foreman of local residents	
Hunting by outsiders take game (moose, etc.) and could result in less "bush food" for residents;	-strictly enforce game laws re non-residents of South Indian Lake	-community might establish a local hunting and fishing lodge to take advantage of improved access, more tourists and free publicity. Guide training.
New facilities at construction camps (sewer, water, electricity, etc.);		-open discussions re community planning and implications - respect present plan.

STAGE II CONSTRUCTION (continued)

EFFECTS	MITIGATION/AMELIORATION OPTIONS	NEW POTENTIALS
New pressures on women in settlements near construction camps;	-open discussion between Council, Hydro and Contractors re behaviour, "rules to be adhered to and means of enforcement". Avoid the kinds of "out-of-bounds" restrictions that often tend to drive certain practices underground.	
Potential stress and strain on community leadership and power structure;	-support local leadership and do not subvert by "buying them off" with jobs, etc. Part of compensation might be to Council to pay members so they don't find working out a necessity and can then concentrate on their community role. -respect and whenever possible, reinforce various elements of community social structure.	
Lifestyle experiences a quickened pace; traditional values challenged; traditional social control tends to breakdown;		
Increased external factors place a strain on traditional decision-making and problem-solving technology;	-create awareness of and assist especially Mayor and Council to identify the nature of this problem - as a normal thing in this kind of transition. -offer training assistance, eg. of the Community Lab type designed specifically to upgrade problem-solving and decision-making skills. Finance Manitoba Human Relations Institute to assist Community Council in decision-making, problem-solving, communications and community life skills.	

STAGE III INITIAL WATER LEVEL OR FLOW

EFFECTS	MITIGATION/AMELIORATION OPTIONS	NEW POTENTIALS
After construction and during water level or flow changes:		-observation of modern facilities in use might set stage to update community facilities;
Construction camps and jobs phased out;	-former trappers/fishermen allowed to "retain" or "redeem" their previous trapping and/or fishing permits.	
Some men go back to subsistence economy but families may have been living on "store" food -- may have become accustomed to "consumer" economy	-counselling/placement/orientation service available (perhaps through Manpower Corps) for those who wish to consider a move to stay in a wage economy.	-opportunities to participate in wage economy may be more readily accessible to those with new experience for whom the traditional resource uses are not sufficient to support i.e., static resource base and increasing population dependent on it.
Docks, sheds, some homes may be inundated;	-move or replace as appropriate.	
Current change; drinking water might be affected	-monitor and advise communities affected and develop with them, means of acquiring a safe water supply.	-Begin planning for employment in the monitoring and marking processes, i.e., training, administration, etc. Could be done through contracts with Fisheries Co-op, Community Council, Trappers Local, etc., as appropriate.
Ice changes: Current and ice changes may have a significant effect on intra-community transportation, communication and socializing during the winter;	-monitor, mark and advise communities affected. -counselling, etc., mentioned above needs to be geared to this. People should be involved in planning for it.	
Navigation channels change;	-mark, map and advise communities affected - do not clear trees that might serve as markers of shoals, etc.	-Northern Manpower Corps might help to plan local employment options with communities.
Further mental stress re what will ultimately happen, eg. possible loss of fishing grounds, debris in nets, will beaver and muskrat re-establish, etc.;	-monitor actual effects on fish and wildlife and involve communities so they are aware of these effects. -producer education and organization	

STAGE III INITIAL WATER LEVEL OR FLOW (continued)

EFFECTS	MITIGATION/AMELIORATION OPTIONS	NEW POTENTIALS
	-producer participation in resource use planning. -give priority to the area in applying appropriate parts of Mines & Resources Fur Program. -where possible, preserve wildlife habitats. -where necessary and possible, develop new habitats. -new and improved spawning grounds.	
Change in physical environment - "old familiar places" under water; Regardless of the assistance given to the community to prepare for the eventuality of change in water levels, the people will undoubtedly experience shock and trauma when it begins to occur.	-accentuate the positive emphasizing the old landmarks and other physical aspects that will have remained relatively unaffected. -maintain effective social psychological support service during the transition.	

STAGE IV POST REGULATION/DIVERSION

EFFECTS	MITIGATION/AMELIORATION OPTIONS	NEW POTENTIALS
New water "equilibrium" reached with regulation/diversion:		
A new situation reached to which adjustments/adaptation must be made re economy (changes re fishing/trapping);	-develop simulation model for fishing industry------ (See Chapter IV)	--focused around present Co-operative.
	-use model to simulate economic effects and alternatives to ameliorate them.	-use model to expand Co-op by testing the addition of new lakes, processing, transportation systems, etc.
Now it registers that the situation is for real. The community begins to come out of shock but the transition is not completed;	-develop monitoring-planning models for resource use planning and development.	
	-new muskrat and beaver habitats created; old viable ones improved and protected.	
Lifestyles (construction and rapid exposure to change and stress will have had permanent effects;	-continued social, psychological support services likely will be necessary.	
	-home and family counsilling service	-may use experiences to more readily adapt to a more "urban" society if they choose to move.
Community infrastructure;	-relocate or replace as appropriate; add new if changes so require eg. navigation aids, ice markets.	-fish freighting more economical from Loon Narrows to Leaf Rapids with deeper water and elimination of portage across Long Point.
Community decision-making processes;	-recognize and respect community systems and reinforce them with decision-making responsibility and with appropriate technical support and training rather than expecting and allowing decisions to be made on the "outside" and in a hurry. People in this community including the decision-makers have always had all the time they required. When we push, we make the urgency ours and it affects community responsiveness.	-information-communication models -(See Appendix J)

STAGE IV POST REGULATION/DIVERSION (continued)

EFFECTS	MITIGATION/AMELIORATION OPTIONS	NEW POTENTIALS
Compensation for damage in itself can have effects depending on how it is handled;	-avoid types of compensation that affect basic life styles. -avoid creating dependency on a paternalistic or an overly authorative Government administrative unit, committee, etc. -the community must not only be involved, it must see itself to be involved in negotiating terms of compensation. -"justice must not only be done, it must be seen to be done".	-compensation can complement basic lifestyles if community so desires and works for such; and provided government organizes it in such a way.

Chapter II

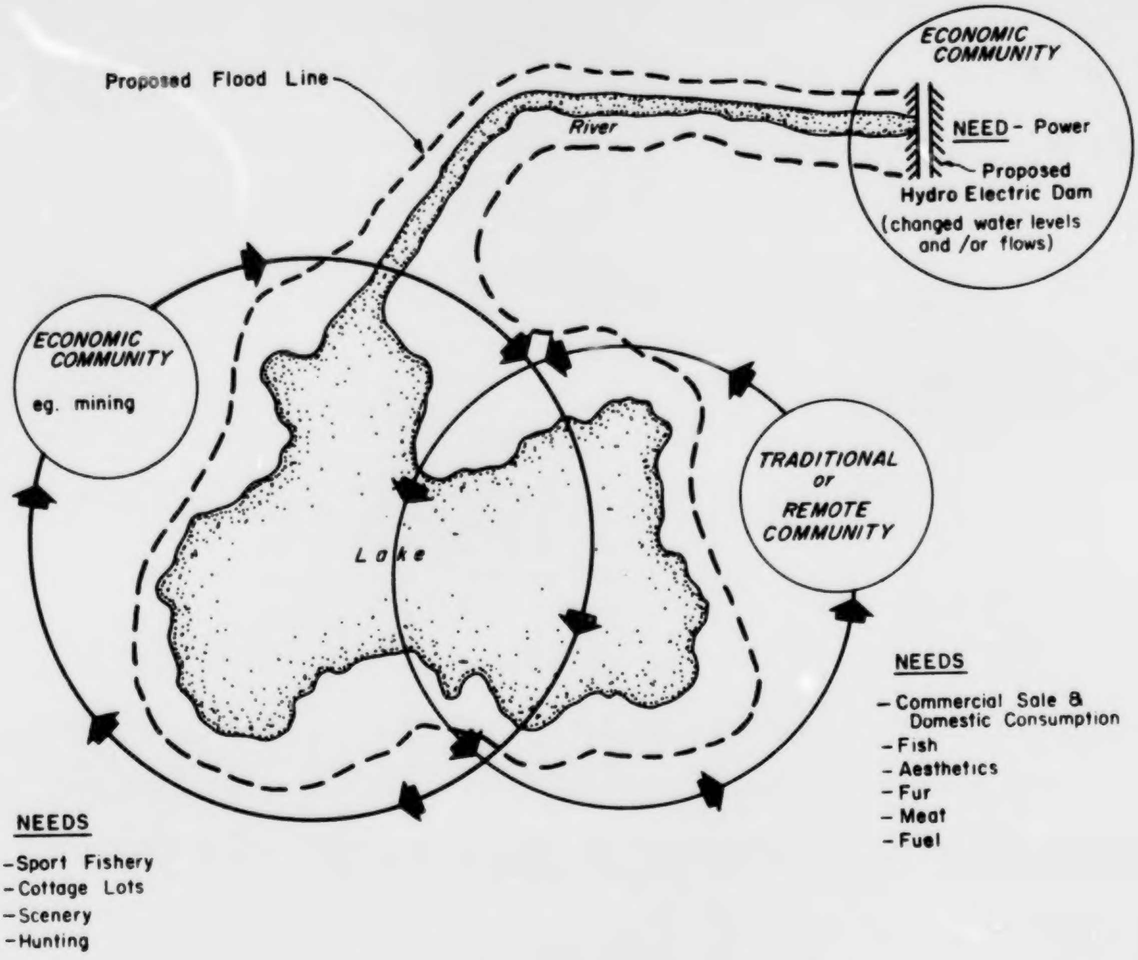
Social and Economic Impact on Settlements of Lake Winnipeg and Churchill River Diversion

CONCEPTUAL FRAMEWORK

CONCEPTUAL FRAMEWORK

The north is comprised of two distinct types of communities with one type evolving from economic and government considerations (Thompson, Flin Flon, Lynn Lake, The Pas) while the others are based on social factors realized over several generations (Norway House, Brochet, Oxford House, etc.). The economic communities are basically site specific in their resource use but place demands on the other communities for recreation and other services. The people in these communities are highly skilled, articulate, and organized to influence governments in the development of their communities. The social communities are based on the extensive use of the land and water resource for their economic livelihood. The people are in the location because of a land allocation (reserve), because of abundant fish and game resources (historically if not currently) or because of early establishment of a trading post. They are not as highly skilled in the conventional sense of employment, lack physical access facilities, but are organizing so that they can better articulate their needs to government.

There is a major difference between the "Economic Community" and the "Remote Community" with respect to each community's needs as imposed upon the resource base. The following hypothetical diagram displays the type of potential resource use overlaps which can occur because of the different needs of these types of communities —


Proposed Flood Line
River
ECONOMIC COMMUNITY
NEED - Power
Proposed Hydro Electric Dam
(changed water levels and /or flows)
ECONOMIC COMMUNITY
eg. mining
Lake
TRADITIONAL or REMOTE COMMUNITY
NEEDS
- Commercial Sale & Domestic Consumption
- Fish
- Aesthetics
- Fur
- Meat
- Fuel
NEEDS
- Sport Fishery
- Cottage Lots
- Scenery
- Hunting

This diagram indicates that the "traditional" or "remote community"* must compete with two "economic communities" whose competitive uses of the same resource base are overlapping and competitive.

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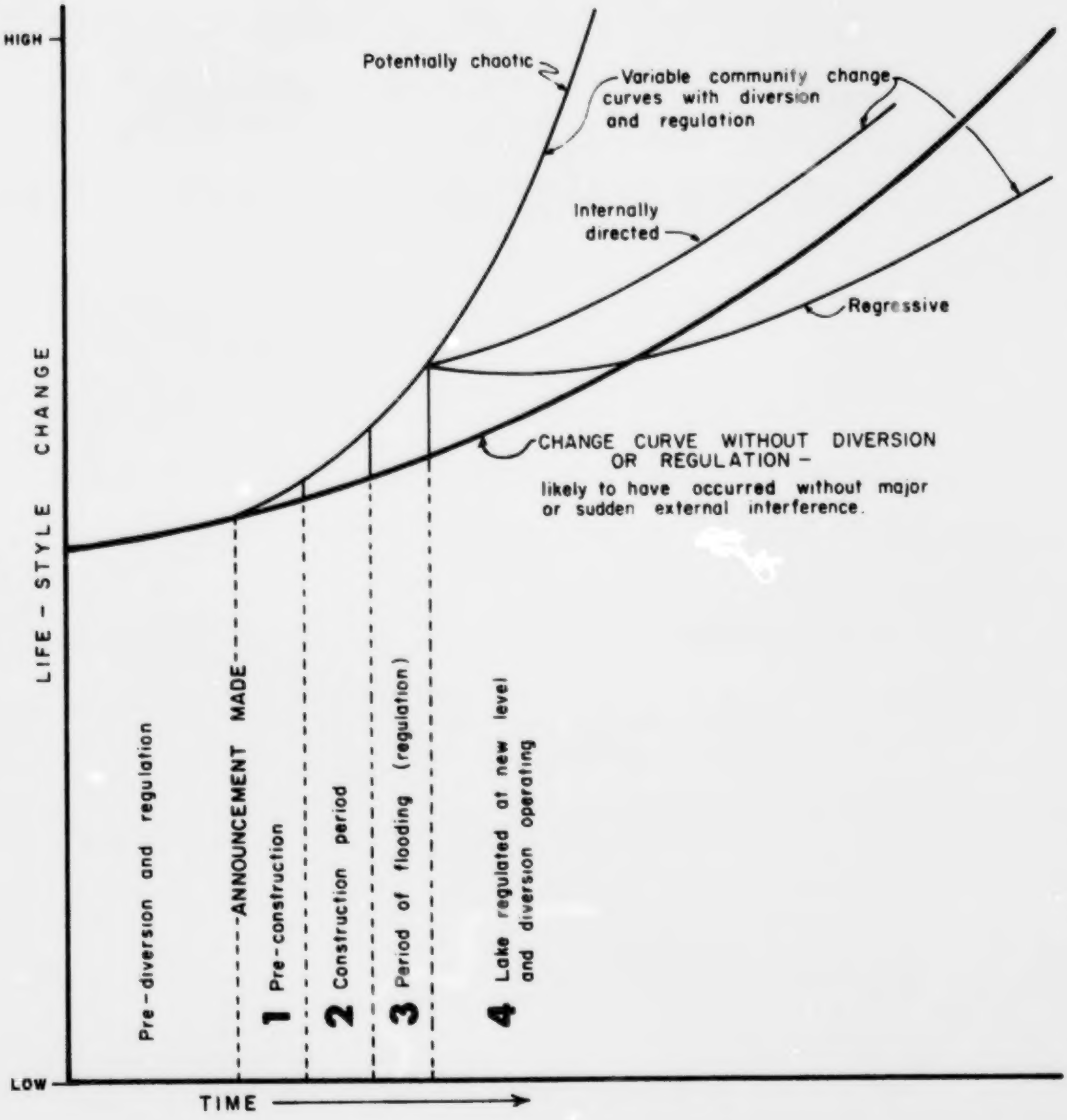
*"Traditional" or "remote" are used to describe a way of life quite different from the conventional life style most Canadians think about. This is not intended as a judgemental term but a descriptive one. This difference is often in addition to a physical remoteness in terms of transportation, communication, etc.

Actions taken by an "economic community" which affect a "traditional community" often, because of their nature, impose a rather sudden burden of change on the "remote community". The following diagram illustrates this effect on rate of change as hypothesized under a hydro development situation. The four phases of activity will be considered separately in the later analysis, but it is significant to note the sudden effect such external decisions can have on rate of change in a community. Depending on how prepared and willing each affected community is to deal with this change, they can enter anything from social chaos (change too rapid and uncontrolled) to regression (apathy). By setting goals, collecting facts, establishing priorities and thereby making their own choices one at a time, however, a community can direct change according to its values and aspirations.

CONCEPT OF SOCIAL AND ECONOMIC IMPACT
on
RATE OF CHANGE


HIGH
LOW
LIFE - STYLE CHANGE
TIME
Potentially chaotic
Variable community change curves with diversion and regulation
Internally directed
Regressive
CHANGE CURVE WITHOUT DIVERSION OR REGULATION –
likely to have occurred without major or sudden external interference.
Pre-diversion and regulation
ANNOUNCEMENT MADE
1 Pre-construction
2 Construction period
3 Period of flooding (regulation)
4 Lake regulated at new level and diversion operating

At the same time as recognizing that no two communities are alike (different communities might well make different choices), it is important to consider and allow for differences between individuals. For example:

1) Some people may want the opposite to what others feel is important (for example, hunters may want certain land set aside for wildlife management, nature lovers may feel that same land would be best suited for a wilderness area, the pulp and paper industry may view it as prime forest land and trappers may want to develop it for fur).

2) Even if people in general agree on certain needs, they as individuals may place different intensities of desire on different things. Intensity of desire for different programs varies because of differing backgrounds of values and different present situations and therefore the degree to which each individual would be affected by the program (eg. a trapper might agree that fisheries training is a worthwhile program, but will not likely be as strongly in favor of it as the fishermen who would benefit directly).

3) The third major reason for differences in desires results from different lengths of time that people look ahead. Someone looking several years ahead will place much higher emphasis on education and research than will someone who is concerned about his next meal. Those with shorter time horizons may tend to emphasize physical and

tangible things such as roads, docks and buildings.

The key point to remember here, is that all of these people are being completely rational in their own way; that all of their ideas relate to their concept of an improved quality of life and that all of them are right. Because different people have different values and ideas, we can look forward to a world of continuing change, challenge and progress and need not fear an existence of dull and complete conformity.

Two major conclusions can be drawn from this discussion:

1) Variations in the attitudes and values of people in society make it abundantly clear that no one program will satisy all needs that relate to an improved quality of life: i.e., there can be no "all-or-nothing" approach; and

2) therefore, in order to satisfy at least a major portion of individual needs, a balanced set of programs will be required. Within a balanced set of programs for an environment geared toward an improved quality of life, individuals will be able to find opportunities which are consistent with their own particular set of values.

This latter conclusion is further substantiated by recent changed attitudes towards regional (and local) development.

Considerable lip service has been paid to the problem of regional disparities over the past decade but, until recently, there was a general feeling that if the national economy was sound, the existence of regional disparities simply meant that those living in low-income areas had refused to move to Toronto.

Such an obsolete and non selective approach has, in certain cases, been abandoned of late in favour of efforts which discriminate in favour of persons who, because of the nature of our society historically (rather than the direct intent of society), have not been able to participate fully in the economy.[3]

The Make-Up of Society

Without using precise figures, it is possible to describe the make-up of society by the degree to which individuals participate in their economy and by the intensity of public effort required to achieve their full participation toward an improved quality of life. This description is illustrated ~~below~~:

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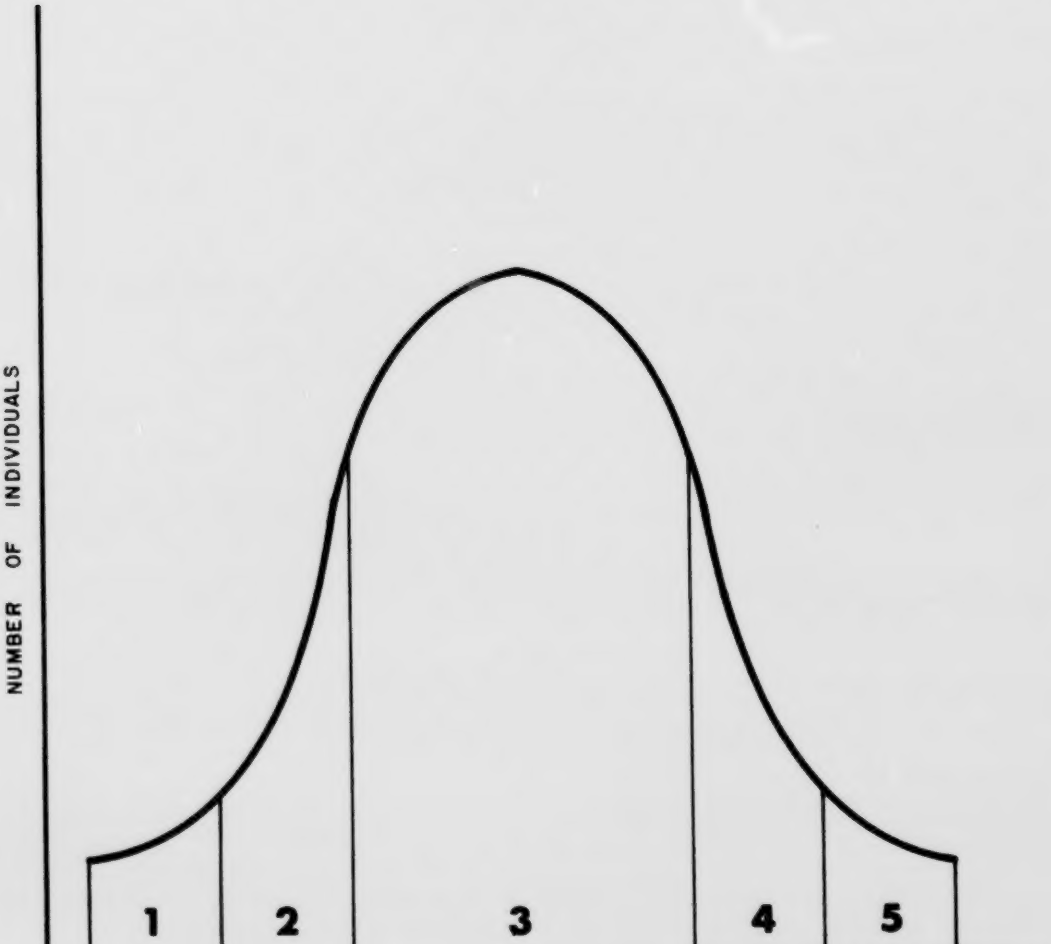
[3] See "Guidelines for Development; The Interlake Region of Manitoba", 1965.

THE MAKE-UP OF SOCIETY


NUMBER OF INDIVIDUALS
1
2
3
4
5
HIGH
LOW
Degree of Participation of Individuals

Detailed explanation of above diagram -

1) Active Participant - achieves his desired standard of living largely on his own: main requirement of the economy is full employment and reasonable stability.

2) Moderately Active Participant - depends to some extent on universal public programs such as job placement, credit, non-subsidized housing assistance, etc., but demands relatively low public assistance.

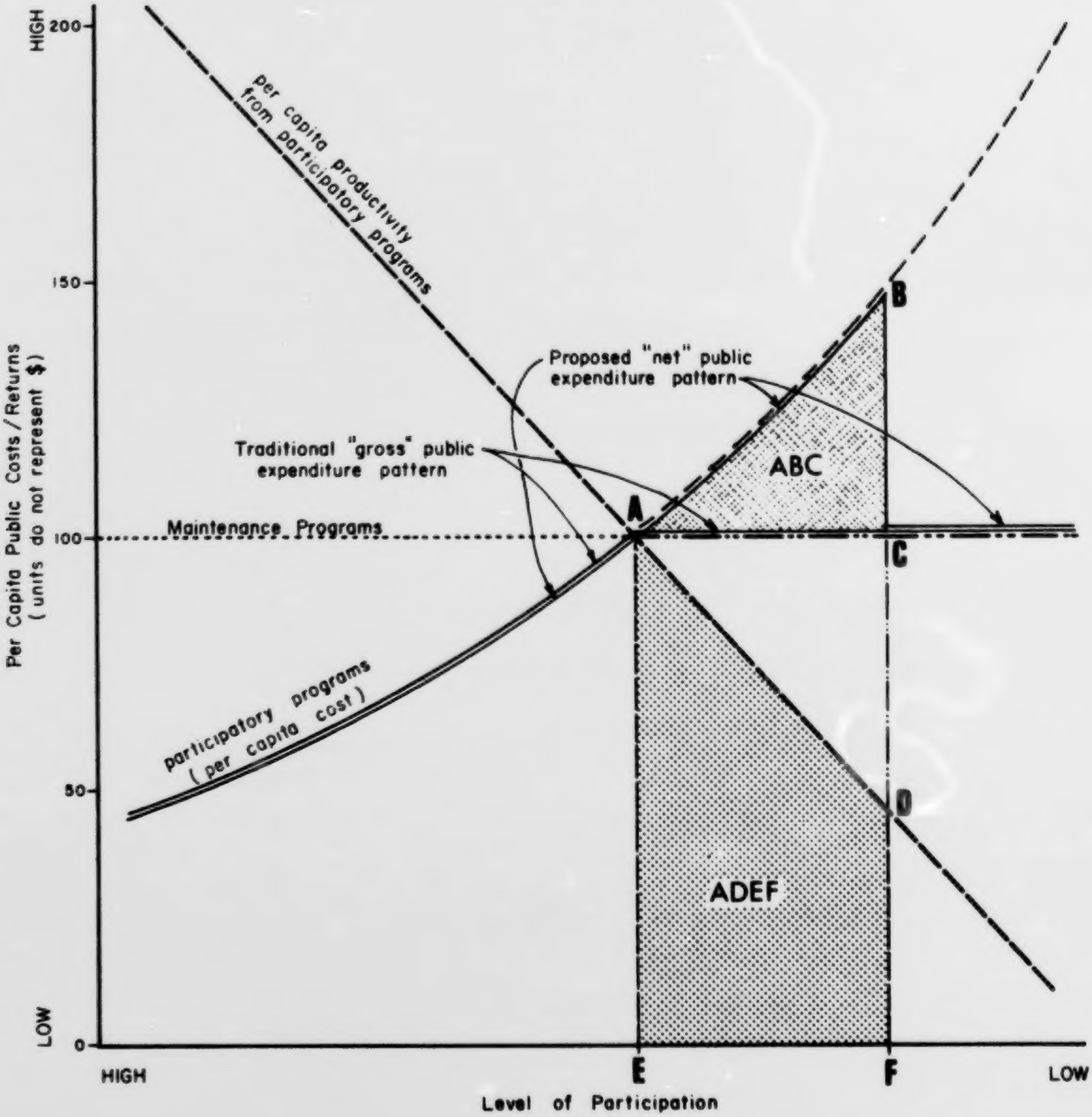
3) Average Participant - not as fully aware of opportunities so probably requires advisory services, some counselling, training assistance, and, for example, some special credit and housing assistance to achieve an improved standard of living.

4) Passive - does not normally seek out opportunities in any aggressive way: fairly intensive counselling required over a period of time along with training and other assistance (eg. Manpower Corps) that will allow the individual to adjust to the world around him and become a participating member.

5) Chronically Dependent - conceivably, there are individuals who, because of physical or mental impairments, or because of the type of environment in which they were raised, are incapable of actively participating in the economy and paying their own way without excessively high assistance costs as implied by regular standardized programs.

Keeping in mind the varying capacities of individuals in society to fully participate in the economy, it is possible to describe the intensity of effort required to enable them to achieve an improved quality of life. This is shown below:

RELATIONSHIP OF GOVERNMENT SPENDING TO PARTICIPATION OF INDIVIDUALS

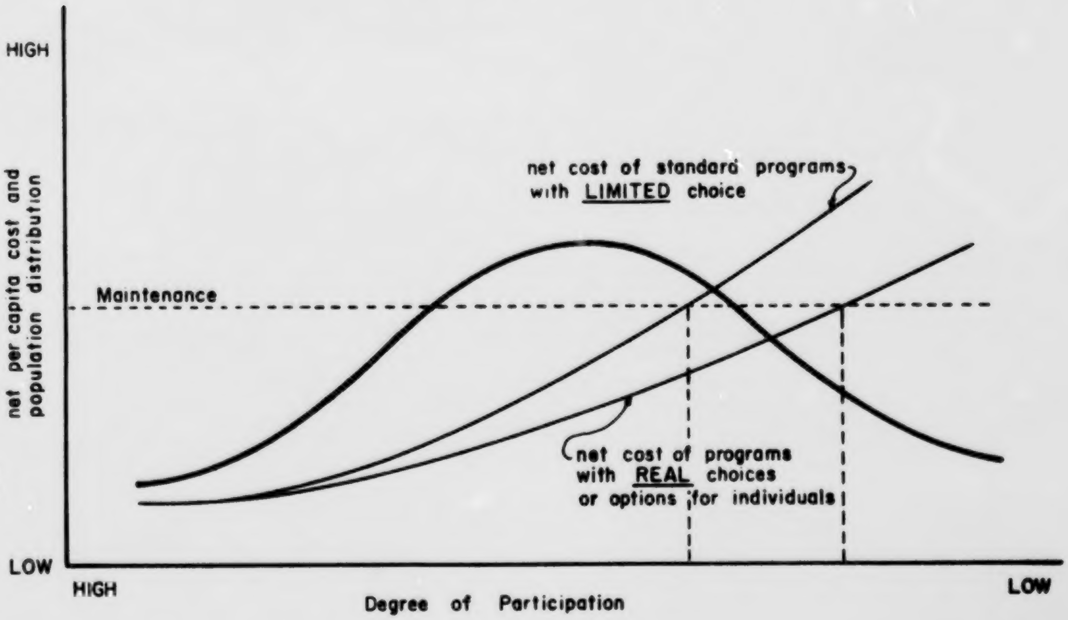


From the above diagram, it is clear that participatory programs which assist people to become participating members of society are most effective over time relative to their cost for the majority in society. At some point, however, maintenance programs are less costly, but if prolonged, maintain individuals as dependents to society at some considerable social and psychic cost, not just to the individual but to his/her family as well.

Traditionally, public costs are seldom associated with any concept of productivity, so "gross" or total costs are evaluated and hence, once the cost of a "participatory" program reaches the "maintenance" cost (point A), the switch to "maintenance" is automatic. This ignores productivity and since direct productivity of maintenance programs is zero, this automatic switch causes actual productivity to divert off the normal slope from A and fall directly to zero at E. If, on the other hand, programs are evaluated on a "net" productivity basis, expenditures on participatory programs would be made until the net cost of this approach reached the net cost of the maintenance system BD = AE. Beyond that point deducting productivity from total cost would result in a higher net cost than welfare.

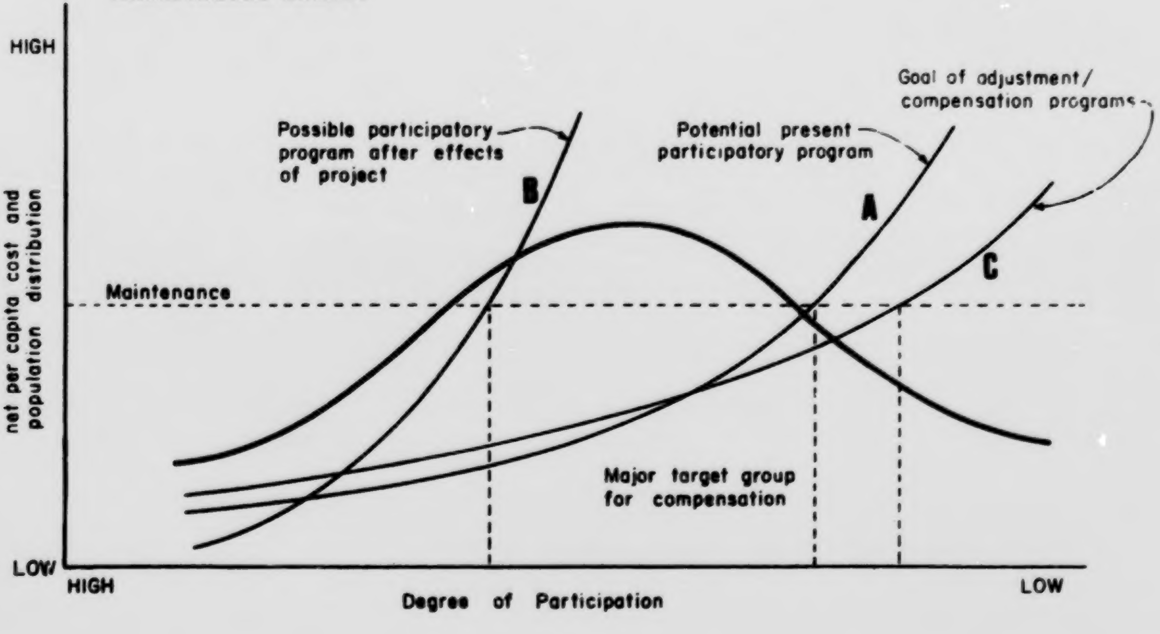
It is within the context of this concept that Manpower Corps has been developed to function so that costs incurred directly related to productivity are a charge against that productivity (AEFD) and costs directly related to training and orientation become a charge against that program objective (ABD). Although the total cost of training is the difference mentioned above (ABD, the actual net cost of training is only that above the maintenance line (ABC).

By superimposing the two previous diagrams, as shown below, it can be noted that the "break-even" point between net costs of participation and maintenance is not necessarily fixed, but rather it is dependent on an individuals awareness, motivation, aspirations and evaluation and decision-making capability as well as on the external situation (including programs) providing him/her with an environment of real choices.



Following this line of thought, a major power development could have two effects (and, consequently, provides two means for dealing with them). First, choices to individuals in the context of their traditional life style will become more limited, at least in the short run, (therefore, there is a need to consider ways of increasing these choices in the longer run). Effects on fishing, trapping, docks, etc., are examples. Second, many standard programs that are not selective and flexible will cease to be of value in the short run, further limiting choice (eg. a fisheries credit program is of little value if there are no fish to be caught, whereas an environmental corps program to assist in monitoring changes in the lake could be quite valuable).

These effects and the concept to deal with them are illustrated below:

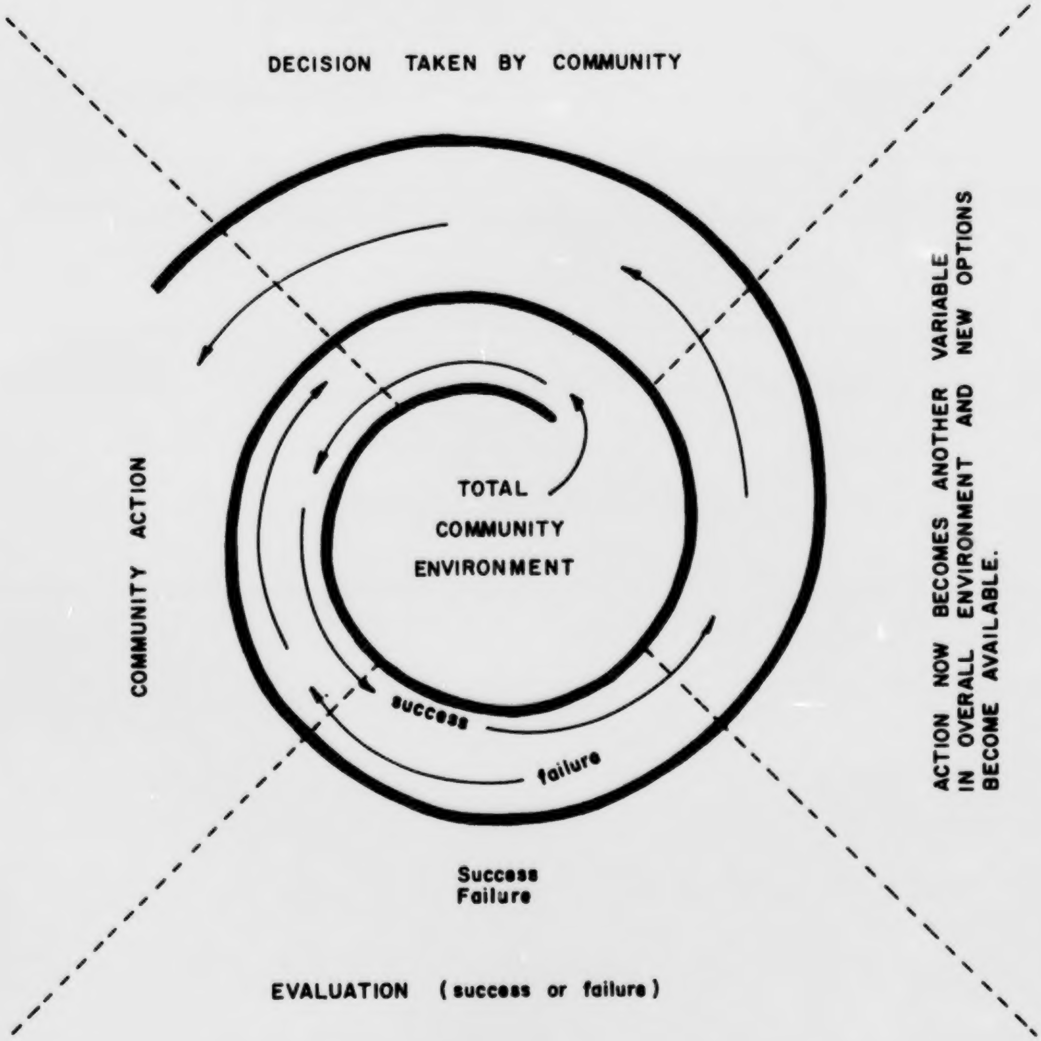

HIGH
Goal of adjustment/ compensation programs
Possible participatory program after effects of project
Potential present participatory program
B
A
C
net per capita cost and population distribution
Maintenance
Major target group for compensation
LOW
HIGH
Degree of Participation
LOW

The above compensation concept is based on the policy assumption that, whatever the effects might be, the community (or communities) and individuals or families within it (them) shall be compensated to make them at least as well off as they would have been without the project (if not better off and certainly not worse off).

Most critical, however, is recognition that with or without hydro developments, changes will occur within the next 20 years which cannot be predicted. Therefore, with the foregoing conceptual framework in mind, it is most important to consider means and processes whereby community (s) and individuals within it (them) will be able to have and exercise options in relation to whatever happens; and that these choices can be made in a progressive and incremental manner; not all at once.

(Diagram p. 50)

COMMUNITY DECISION-MAKING IMPACT MODEL

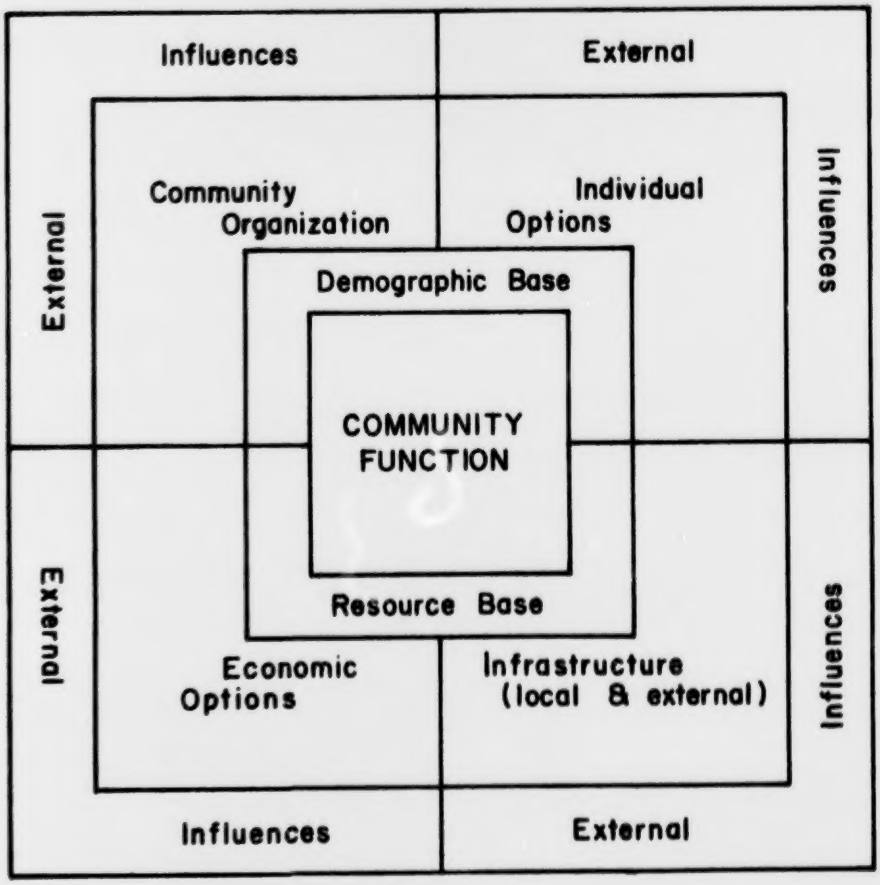

DECISION TAKEN BY COMMUNITY
COMMUNITY ACTION
TOTAL COMMUNITY ENVIRONMENT
ACTION NOW BECOMES ANOTHER VARIABLE IN OVERALL ENVIRONMENT AND NEW OPTIONS BECOME AVAILABLE.
success
failure
Success
Failure
EVALUATION (success or failure)

From the above diagram, it can be seen that as a community makes decisions and these decisions lead to successful action, they become part of the overall community environment - an expanded base - upon which further decisions can be taken of an increasingly complex nature. If, on the other hand, action fails to achieve the desired result, the community base spirals inwardly: retreats: regresses. This can happen if decisions are forced about matters not fully understood or forced to occur too quickly. Therefore, it is critical that decisions progress on a "success" basis reaching but not overextending the capacity of the community to handle them. This could imply some delays in early stages (eg. perhaps of local improvements, housing, etc.) but would provide a base for much faster and more responsive decisions and committments over time.

Having this in mind, actual analysis of social and economic impact can be carried out on the basis of four unique but interacting community variables. These are:

(Diagram p. 52)

INTERACTING COMMUNITY VARIABLES


Influences
External
Community
Organization
Individual
Options
External
Influences
Demographic Base
COMMUNITY
FUNCTION
Resource Base
External
Influences
Economic
Options
Infrastructure
(local & external)
Influences
External

I Community Organization Factors

- government (formal and informal_
- industrial (fish co-op)
- education
- religion
- information sources and systems
- social groups
- special interest groups

Decision-Making Processes, eg. how are decisions made re:

- new fish station or ice house
- summer festival
- park expansion
- housing allocation
- winter works project (s)

II. Individual Option Factors

- forms of recreation
- external contact and information
    - radio
    - papers
    - magazines
- language skills
- music
- fishing camps)
- trapping) social styles
- visiting
- hobbies
- community social events
- access to education
- access to services
- access to job training

Note: External factors such as changes in job qualifications, entrance requirements for training, etc., could have major effects on real individual options.

III. Economic Option Factors

Activities

- fishing
- trapping
- commercial
- services
- tourism (hunting and fishing)
- accommodation
- construction
- forestry
- other

Income and Employment

- number in labour force
- numbers employed by month
    - average months employed over year and distribution
    - average income and distribution (net and gross)
    - employment activities
- income replacement (social allowances)
    - to members of labour force
    - to other residents
        - by amount
        - by month

Note: External factors which affect these options include changes in demand (price), transportation costs, credit availability, etc.

IV. Infrastructure (internal and external)

- passenger)
- freight in)
- services)
- freight out)
- radio)
- telephone)
- medical)
- television)
- newspapers)
- magazines)
- mail)

dependency rate
non-dependency rate (frequency
and average, minimum and maximum
length of disruptions)

SUMMARY:

1) "Economic" communities can locate near, or take other actions, which significantly affect the "traditional" or "remote" communities in the north.

2) Such effects cause a rapid increase in rate of change (social and economic) in "remote" communities which implies strong and capable local organization to enable these communities to direct the change rather than be

directed by it. Assistance in developing these organizational and decision-making skills and responsibility and capacity to carry out decisions reached may be required.

3) In many cases, changes were likely to occur anyway due to the great variety of external factors; hydro-electric developments act as a catalyst and cause these changes to occur more rapidly and concentrate them into a short period of time.

4) Each community is different and individuals within each community are differ[illegible]re, equitable mitigation or compensation im[illegible]ery flexibility to adapt to these differences.

5) Immediate effects of power development could reduce options to many people in affected communities; therefore, the need is to consider means to increase options at least as much as would have occurred without the power development (i.e., compensation not less than the net negative effects).

6) Net effects can be estimated in terms of community organization, individual options, economic options and infrastructure.

7) Often, a power development creates new options that previously did not exist, thereby increasing local options if

they can be made real options through whatever combination of factors necessary.

CHAPTER III

A COMMUNITY DEVELOPS

A History of Southern Indian Lake

A COMMUNITY DEVELOPS

A History of Southern Indian Lake*

THE COMING OF THE PEOPLE

From the time of earliest Indian migration out of Asia some 40,000 years ago, most Indian populations have been mobile since their livelihood was dependent on the need to hunt and fish. In the case of the hunter-fisherman this took him into areas of seasonal abundance where he developed his skills and technology to meet the demands for his survival. The Crees and Chipewyans, in their tribal migration, occupied the Southern Indian Lake area during different time periods and archaeological evidence indicates that Cree penetration as far north as the Nelson River may have been as early as 500 - 1000 A.D.

There has been some indication that historically Northern Indian Lake and Southern Indian Lake may have represented tribal boundaries between the northern tribes (Chipewyans)and the southern tribes (Crees). However, the names Northern and Southern appear to be merely directions of the Indian Lakes; the tribal boundaries have shifted through time.

Prior to 1700 the area north of the Nelson River was traditionally Chipewyan. As a result of early trading the Crees acquired firearms before the Chipewyans. A small pox epidemic amongst the Chipewyan people in 1781 reduced their population to one-tenth its previous size. As a result of these two major factors, the Crees displaced the Chipewyans further north and extended the Cree territory to the Churchill River in the inland parts of Manitoba. Since this event, Southern Indian lake has been Cree territory.

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*The quotes used throughout this Chapter arise from interviews with long time residents of South Indian Lake.

ESTABLISHING A COMMUNITY

From this evidence it is difficult to determine exactly when a settlement was established but according to some residents, "there was always someone at Southern Indian Lake". As early as 1803 the Hudson's Bay Company had established a post at the north end of the lake where John Charles Thomas seasonally traded during the winter. In 1805 the North West Company located a post at the south end of the lake. Farther south a post was located on the shore of Footprint Lake in 1804.* The fact that these trading companies established in these locations reveals the active presence of Indians in the immediate area. About 1824 the Hudson's Bay Company closed and abandoned their post on Southern Indian Lake. However, it was re-established as an outpost during 1919 and 1920. The winter trip-trader** travelled by dogs from Nelson House to the people at Southern Indian Lake. He traded flour, tobacco and other items out of a small shack and in this way enabled the trappers to remain on the trapping grounds through the winter.

The community as we know it today appears to have established around the trading post in the late 1920's as small family groups gathered and settled at the site. This outpost was established as a permanent post in the late 1930's and has served the community to this date.

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*Present day Nelson House is located on Footprint Lake.

**Tripper or travelling trader.

THE COMMUNITY ESTABLISHED

At one time there was an attempt made by the Chief of the Nelson House Band to have the South Indian Lake people move to Nelson House and establish themselves on the reserve. The older people chose to remain in the Southern Indian Lake area because it provided "good fishing and hunting, it was on the main migration route of the caribou and there were plenty of moose on the lake" -- advantages which were not available at Nelson House.

THE COMING OF OUTSIDERS

The native community soon absorbed "white trappers" who came in through Nelson House and Cold Lake prior to and following the First World War. There was a mixture of ethnic backgrounds including Swedes, Icelanders, Norwegians, French and English. On the most part these trappers stayed unto themselves and maintained their cultural discreteness. However, a few married Indian women and became a part of the Indian community; they introduced different lifestyles, experiences, values and language into the native culture.

Prior to the coming of the "white trapper" the local people had had little opportunity to be exposed to a culture other than that of their own. With the coming of the Dysarts, Clees, Bakers, Andersons and others, a new influence was introduced into the community. Some "white trappers" were not too ambitious, some were more aggressive, and some established themselves high on the social scale. However, all had an influence on modifying the technology of doing things and therefore the culture. For example, the Clees were the first to operate their own bombardier following Tom Lamb and Oscar Blackburn: Owen Ashley brought in the first outboard.*

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*To indicate the importance of importing these new technologies the influence of the outboard was widespread. Previously settlements moved when wood became too far distant to carry. Now wood could be barged in to supply the community. The Hudson's Bay Company and traders paid for wood to be hauled, bringing a new source of cash income. Wood rafting by outboard was incorporated into the annual schedule of trapping and fishing.

Other outsiders were to come and to influence the lifestyle of South Indian Lake. Traders followed in competition with the Hudson's Bay Company. Bacon, a tripper from The Pas, used to come through with six or seven canoes, selling supplies and buying furs. Later others located permanently at the community site. The Morantz brothers came from Winnipeg and established a trading post in the mid-1930's. John Webb, who was originally a trapper bought out the Morantz brothers and traded up until 1942. Oscar Blackburn came from the Peace River district and traded from the 1940's to the mid-1960's. School teachers and Conservation Officers were some of the others who had an influential effect on the community lifestyle.

MIGRATION

Early migration patterns show that there were a number of persons who had come into the community as well as some that had left. Some moves were of a temporary nature while others were more permanent. While a detailed study of migration was not possible, some excerpts from the interviews regarding migration patterns serve to indicate the diverse backgrounds of the people of South Indian Lake. "Daniel Soulier came from Cross Lake to work for a fur trader at Nelson House and moved to South Indian Lake". "Sahra Miswagan, originally from Trout Lake, Ontario, came to work at Cross Lake, later married at Nelson House, and shortly afterward moved to South Indian Lake." "Stanley McLeod came from Cross Lake". "The Bakers came from Bakers Narrows". "The Spences and Linklaters moved from Nelson House to South Indian Lake." "Oscar Blackburn came from Peace River, Alberta via The Pas and Wabowden." "The odd family left permanently but most stayed." "William Dysart had a job as an underground foreman but quit and returned to South Indian Lake."

HOUSING

Early homes were log buildings with no windows and a square smoke hole in the roof. Later most Treaty Indian homes were log except for the door and window frames. Metis homes utilized more lumber from the sawmill "as a result of them getting logs and sawing them themselves". Wood being the source of fuel, airtight heaters predominated. Most trapline cabins had cook stoves. Oil drums were used for heaters.

At one time many families lived in one or two room dwellings and all activities took place in this area. "Children slept three and four to a bed and, by tradition, the oldest daughter slept with the parents". Throughout the years housing has improved somewhat by the use of modern building techniques and materials.

RECREATION

There was always some form of recreation in the community. During the week long treaty period there were canoe races, women's boxing, baseball and wrestling. There were box socials at the school which served as a means of raising money. There were dances, but no historically cultural dances. Gambling was not that prevalent but it has always been a part of their way of life.

RELIGION

Both Protestant and Roman Catholic faiths have been, and are, represented in South Indian Lake. "The Protestant Church seemed to have been more active although the Roman Catholic Church was responsible for getting the school going". The Northern Evangelical

Mission was established in the mid-1950's and the two missionary girls taught school. Generally, when children were born they were baptized by whichever priest or minister was present in the community at that time. As a result there are mixed religious memberships in families and there is generally family participation in a religious service regardless of denomination. "Everyone loved to sing and the Church provided a focal point for that expression."

THE ECONOMY

The very reason for the location of the Indian people around Southern Indian Lake was the seasonal abundance of economic resources. Bush food was the major reason and to this day remains an important part of the day to day domestic use of the natural resources. At different times of the year caribou, moose, beaver and whitefish were killed for domestic use. Hides were used to make body clothing and at one time it was common to see moose hide jackets and mocassins worn by the local people. Body clothing was later purchased because "not enough hides were available to make garments".

In the cash economy patterns of trapping and fishing developed around the availability of the resources and more recently current market trends. Trappers went out to their trapping grounds in the late fall and trapped until Christmas when they returned to the settlement. During the cold months of January, February and March when fur bearing animals did not move about, the winter fishery was in full swing. Spring trapping intervened between the winter and summer fishing season. Summer fishing occurred between June and September.

Up to the late 1930's or early 1940's the primary cash economy of South Indian Lake was based on trapping. Fur was sold to the traders in return for dry goods, flour, oatmeal, tobacco and other basic items. The Hudson's Bay Company bought fur at "average" prices but sometimes paid different prices for the size of pelts. The "Free Trader" bought on the basis of quality. As a result the better trappers were grubstaked by the "Free Trader" but "almost everybody capable of trapping got a nominal amount" from the Hudson's Bay Company. Consequently, under this system there was "no incentive to trap harder or longer" because "nobody starved".

Those who dealt with the Bay looked upon the manager as a benefactor and went to him for all forms of assistance -- to fill out forms and to seek general counselling and guidance. The Hudson's Bay Company was, in essence, "Banker and Welfare Officer of the community". Later, when there was the Hudson's Bay Company, the Free Trader and a Government representative all in the community, the people began to go to the latter for family needs since they felt that he had more influence in matters of policy.

In 1942, a major economic change occurred when Tom Lamb, under permit to remove 1,000,000 pounds of whitefish came into Southern Indian Lake. Other fish buyers and fish companies followed closely. The local people had a preference to fishing because fishing brought a quick return for their effort. They supported the fishery since grubstakes could now be obtained from the fish companies or buyers that appeared on the lake. Originally, fish were purchased on the basis of 10¢ per fish. Mat Zuba initiated the procedure of buying fish by the pound. Later Eldon Robertson, at the request of the Department of Mines and Natural Resources, organized an operation that weighed and bought fish at the "basin hole"* and provided groceries and lumber at near cost to the local fishermen. More recently, a co-operative organization has been formed for the processing and marketing of fish harvested from the lake.

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*The hole in the ice through which the nets were lifted.

TRANSPORTATION

Transportation improvements had a significant impact upon both the economic and social life of the community. The dog, the tractor, the aeroplane, the bombardier and the skidoo were all part of the transportation changes.

When the traders located in the settlement flour and oatmeal (trade goods) began to augment fish as a supply for dog food; this enabled trappers to travel further from home into better fur producing areas.

The first aeroplane appeared in 1928 and was to be followed by commercial charters from Cold Lake and Flin Flon. The aeroplane transported fur out and supplies such as lumber, gasoline, groceries and dry goods in. In 1942 Lamb hauled fish by aeroplane for the first time; this may have been the forerunner to more regular air service into the community.

Bombardiers revolutionized commercial fishing on the lake. Fish could be picked up at the basin hole and transported to Lynn Lake more economically than by aeroplane. Fishermen were more willing to leave their families in the community knowing that they could get back for visits with relative ease. Previously, the trip was made by dog team -- which took two or three days each way. Now it could be made in a matter of hours. Consequently, dog teams have decreased in number, although there are still those who do not trust the bombardier or skidoo a long way from home.*

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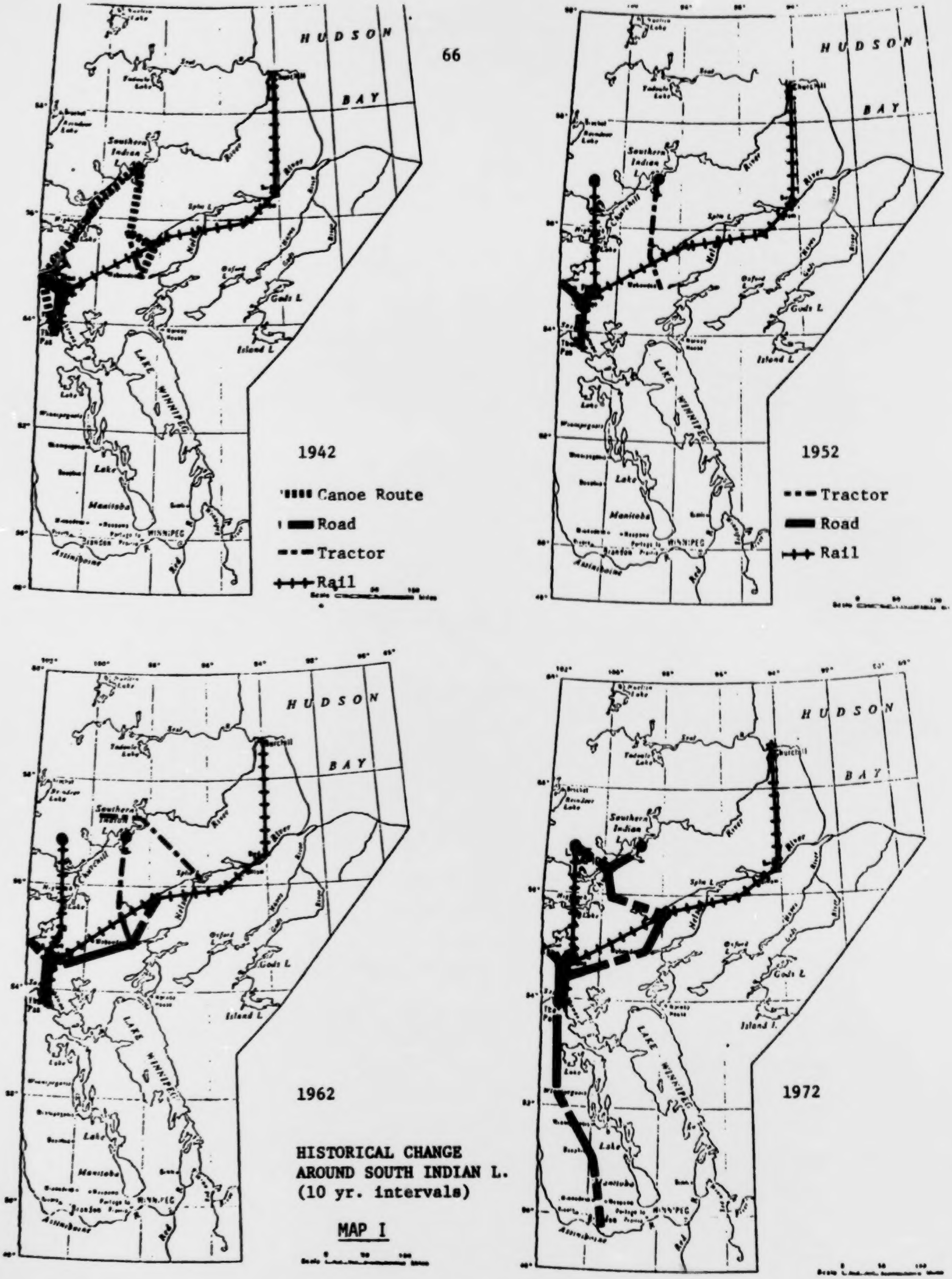
*For a visual presentation of the transportation changes surrounding Southern Indian Lake, see Map I.


HUDSON BAY
Churchill
Southern Indian L.
Tadoule Lake
Nueltin Lake
Brochet
Reindeer Lake
Seal
Churchill
Nelson
Split L.
Thompson
Oxford L.
Gods L.
Island L.
Hayes River
The Pas
LAKE WINNIPEG
Norway House
Lake Winnipegosis
Lake Manitoba
Portage la Prairie
WINNIPEG
Brandon
Assiniboine
Red R.
1942
Canoe Route
Road
Tractor
Rail
1952
Tractor
Road
Rail
1962
1972

HISTORICAL CHANGE
AROUND SOUTH INDIAN L.
(10 yr. intervals)

MAP I

COMMUNICATIONS

Originally, the Hudson's Bay Company had the only radio in South Indian Lake. Later the Game Officer had a radio that could make contact with the provincial government agencies. Later some trappers and fish buyers on the lake had Manitoba Telephone System radios or provincial government radios. "Messages were passed over 1720 MH_2 (Game Branch radio frequency) as almost all house radios could monitor this frequency, although it was not the Department's policy to use the radio in this way." Local radio stations i.e., Flin Flon and the "Mail Bag" radio program provided a contact between those in the community and those "outside".

Shortly after the introduction of the aeroplane, mail began to be flown in on a monthly basis. By 1960 mail was delivered bi-monthly from Wabowden. Along with the mail came Eaton's catalogues. The C.O.D. era was now upon them with "only about 10% being paid for and the remainder being returned". Because of the volume of mail there was eventually some control put on C.O.D. orders into South Indian Lake (as was the case with other northern communities). The mail brought other changes with it: Liquor could be ordered by mail and yeast could now be ordered freely (previously, it had been a restricted item).

EXTERNALITIES

A. New Towns

The development of the town of Lynn Lake changed the outside linkages of the community of South Indian Lake. It was more economical to haul fish to Lynn Lake than to Wabowden or Ilford because of the considerably shorter distance. People could travel out to Lynn Lake by aircraft or bombardier and then south to other communities by train. The mail service started to go through Lynn Lake. "There was more of an economic effect than a social effect although there was the travel and easier access to liquor."

More recently, the development of Leaf Rapids has made these kinds of "outside" effects more accessible and hence their impacts (both positive and negative) have been intensified.

B. Government Services

i) Social Assistance - Welfare services were available in the 1930's at which time there were active recipients in the community. Indian Affairs granted welfare to Treaty Indians and in later years "welfare was issued upon the consensus of opinion between the two traders, the Game Officer and frequently the two Councillors". During this period the limited number who got welfare were unwed mothers and the sick. This system of determining the distribution of welfare developed as a result of the limited contact with outside agencies. With the increase of Federal and Provincial civil servant representation in the community "this procedure was changed and welfare was issued more freely". Provincial representatives did not know the situation and were not "about to ask for a local opinion". The relative ease with which provincial welfare was issued caused some to be regarded as lesser members in the community. A situation developed where some men would no longer go out on the trapline.

A change in another form of assistance - this one non-governmental - also had deep effects on the trapping. The old system of grubstaking everybody with enough to keep them on the trapline was dropped in the late 1950's; only those trappers who had produced the year before were provided with a grubstake. This had a social effect in that "it served to put the whole system on an incentive basis; this differed from the traditional Indian way where everyone had their niche and shared in the harvest regardless of their level of productivity".

ii) Medical Services - Medical services commenced in the early days when a doctor accompanied the Treaty party once a year. From this early service eventually regular aeroplane trips into the community allowed nurses to visit for several days every two weeks. With better air service into the community it became possible for patients to go out to hospital for treatment.

iii) Education - The Roman Catholic Church aided financially in the development of the first school. In 1948 the Department of Education organized another school in the community. This school was unique at that time in that it was supported and run by the community rather than the Church or Indian Affairs. It was to establish a pattern for other schools in the north to follow. The site was selected on neutral ground equidistant from the Metis, Treaty and Church centres. Grants were small and the people had to support their children in school. Work or fuel were acceptable contributions to a child's support in cases where the family was not able to provide the financial assessment.

Throughout this time children went out to residential school and returned for two months during the summer. The resulting cultural effect produced traumatic experiences for both parents and children. "The majority of parents preferred their children to stay at home."

The Family Allowance and schooling had a tremendous impact on trapping. The policy was to keep children in school or no Family Allowance was paid. This had an adverse effect on the family's ability to perform as a unit and disrupted their family lifestyle. It did, place a little extra cash in the hands of the traders.

From its beginnings as a one room log school, the system has progressed through the Special School era into the Frontier School Administration.

- - - -

This history has been presented in order to give the reader a greater appreciation of the background of the people of South Indian Lake, the lifestyle which they developed, and the changes which have taken place in that lifestyle; changes which came about as a result of a multitude of external influences - some of which have been revealed here. A knowledge of the historical changes and the community's response to them yields a greater understanding of the situation today.

Chapter IV

THE RESOURCES AND HOW THEY ARE USED

The Economy

THE PRESENT ECONOMY OF SOUTH INDIAN LAKE

The economy of South Indian Lake is composed of three basic sub-economies which constitute the lifestyle of its residents. They are a traditional economy based on hunting, fishing and trapping, a wage economy based on work for wages and an economy based on government payments in the form of Family Allowances, Old Age Pensions and Social Assistance. Family heads may earn their livelihood from one sub-economy or a combination of the three. Each income pattern will change expenditure, credit, work and social patterns.

Social change occurs when there is economic change. For example, in a traditional economy the man, wife and children work together as partners. Indeed, there exists a social structure based on the extended family or clan who work together and as a result have certain lifestyles or way of life. However, when the man works for wages he comes in contact with new ideas and perhaps may change his values. As a result, family relationships, especially the extended family relationships change and may not be as strong as they were under a traditional economy.

This phenomenon is even more pronounced with younger generations. The values and standards of the young people are at least partly based on their experiences outside of their community while the older people, although not without outside interest and contact, are oriented to traditional community interests and activities. Two generations who do not share the same experiences and goals are certain to find it difficult to understand each other.

The community of South Indian Lake is presently experiencing a period of rapid change due to the development of Leaf Rapids, the construction of the Lynn Lake-Thompson Highway, the management of the new fish packing facilities, and the Hydro development that includes uncertainties associated with it. In order for communities to be able to cope with change, the change must be able to be controlled by the community residents. One aspect of change is economic change and if the residents desire such change they must be able to direct it. Economic change must not be forced upon the community.

If the percentages of income by economic activity or by economy do not change between the pre and post water regulation periods then the pre and post economies are comparable since economic lifestyles will not change. At the present time 37% of the community's income accrues from traditional activities, 35% accrues from wages, while 28% derives from transfer payments from Government. By looking at the sources of income by economic activity one finds that 43% of the community income derives from fishing, 4% from trapping, hunting 8%, and forest activities 3% to total 58%. Wages from construction provide 5%, service industries provide 3% and government pays 6% in wages and 28% in transfer payments. However, if the economic activities change with water regulation then the incomes are not comparable because lifestyles will change.

At the same time the residents of the community will experience change in their lifestyle regardless of the Hydro project and the related diversion of the Churchill River. This change will occur because of influences arising from within the community and outside of it. Such influences outside of the community include new transportation linkages, new information and communications linkages, changing demands for natural resources and so forth. Changes are also occurring within the community. For example, the population is increasing and will increase the labor force from 129 to 280 by 1990. As a result the traditional community lifestyle will no longer be possible, but individual traditional lifestyles will be possible for some. At the same time, some residents, especially the students, will have contact with other lifestyles and standards of living as a result of their travels outside of the community and will desire better standards of living and will change their aspirations and so forth. As a result, new lifestyles will evolve.

However, traditional lifestyles are possible at the present time. Even though the above influences will cause the lifestyle to evolve from a simple, traditional one to a more complex specialized one, the important point to note is that the normal evolution of lifestyles will take decades or generations. The catalytic effect of Hydro development has a potential to cause a very rapid change in lifestyles -- a "mutation". However, the catalytic effect of the Hydro development is making government more aware of community lifestyles, of the importance of community decision-making processes, and is forcing government to communicate and involve the community regarding its destiny.

Government should assist the community to preserve lifestyle and make the present economic activities more viable. At the same time some change is inevitable and those who choose to change their lifestyles should be assisted to adapt and direct that change rather than be directed by it.

RECOMMENDATION

i) The residents of South Indian Lake need to be able to choose their lifestyle rather than being forced to change their way of life for economic reasons caused by the regulation of Southern Indian Lake*. If they choose to preserve their present way of life, or if some wish to

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*This is similar in concept to the "stay option" outlined in "Guidelines for the Seventies".

> change their means of earning a livelihood and hence their lifestyle, assistance in the form of a variety of choices over time will be required. Considerable potential appears to exist in the traditional activities (fishing and trapping) and new program approaches must be developed to make this potential a reality if the community so desires.

In the following sections of the report recommendations will be made that will indicate how lifestyles can be preserved if desired and how the community can be involved to direct change if they wish to have change and when they wish to have it.

THE ECONOMY OF SOUTH INDIAN LAKE - 1972

In 1972 the community* income of South Indian Lake was $538,800 while average income per person in the labor force was $4,176. The community income is presented in this report in two different but related ways: by economic activity and by economy. Economic activities include fishing, trapping, hunting, forestry, service and construction employment, and government payments. The economy is divided into traditional activities, work for wages and transfer payments from government. The combination of economic activity and economy describes the way of life in the community.

The economic activity of fishing provided $235,100 or 43% of community income; trapping $21,600 or 4%; hunting $41,000 or 8%; forestry $17,500 or 3%; construction $25,300 or 5%; service industries $15,000 or 3%; and government $183,200 or 34%. The government payments consisted of $35,000 in wages and $148,200 in transfer payments. A combination of fishing and government provided 77% of the community income.

By comparison, the traditional economy that includes fishing, hunting, trapping and wood cutting provided 37% of the community income. The wage economy provided 35% of incomes with 60% of the wages coming from the fishery. Government transfer payments paid the other 28% in the form of Social Assistance, Old Age Pensions and Family Allowances.

Tables I and II provide a summary of the economy and hence economic lifestyle of South Indian Lake.

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*This excludes income of transient residents such as teachers, nurses, etc.

TABLE I PERCENTAGE OF INCOMES DERIVED FROM ALL INCOME SOURCES AND ECONOMIES 1972

ECONOMIC ACTIVITY	TRADITIONAL ECONOMY		WAGE ECONOMY	TRANSFER PAYMENT ECONOMY	TOTAL
	CASH	INCOME-IN-KIND			
FISHING	15	7	21		43%
TRAPPING	2	2			4%
HUNTING		8			8%
FORESTRY		3			3%
CONSTRUCTION			5		5%
GOVERNMENT			6	28	34%
SERVICE INDUSTRIES			3		3%
TOTAL	17%	20%	35%	28%	100%

TABLE II THE ECONOMY OF SOUTH INDIAN LAKE IN 1972

INCOME SOURCE	TRADITIONAL ECONOMY		WAGE ECONOMY	TRANSFER PAYMENT ECONOMY	TOTAL
	CASH	INCOME-IN-KIND			
FISHING	$85,000	36,400	113,700	-	$235,100
TRAPPING	11,600	10,000	-	-	21,600
HUNTING	-	41,100	-	-	41,100
FORESTRY	-	17,500	-	-	17,500
CONSTRUCTION	-	-	25,300	-	35,300
GOVERNMENT	-	-	35,000	148,200	183,200
SERVICE INDUSTRIES	-	-	15,000	-	15,000
TOTAL	$96,600	$105,000	$189,000	$148,200	$538,800

II THE LABOR FORCE AND BALANCE

A labor balance provides information on the balance between employment and the labor force in a community.

The labor force is estimated by determining the number of men in the community between 15 and 65 years of age who are not attending school. This estimate is shown in Table III.

III The Labor Force of South Indian Lake

AGE GROUP	NUMBER	TYPE
15 - 20	20	Mobile, trainable
20 - 40	70	Many mobile, most trainable
40 - 65	39	Not mobile, most are fishermen & trappers
	129	

The labor force is estimated at 129, ninety of whom have some mobility and can take advantage of training programs. However, only 10 have stated that they are willing to relocate if they would receive vocational training. Four are in their teens, four in their 20's and two in their 30's.*

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*See Page 131

**I.A.N.D. Human Resources Study, 1973

Of the total estimated labor force, approximately 19% worked between 0 and 10 weeks, 19% worked between 11 and 20 weeks, 16% worked between 21 and 30 weeks, 23% worked between 31 and 40 weeks, 7% worked between 41 and 50 weeks and 17% of the labor force worked full time, (Table IV.). However, the unemployed may have spent a portion of that time on subsistence activities such as hunting and fishing for food and cutting wood for fuel.

TABLE IV - Weeks Worked by the South Indian Lake Labor Force (Based on a sample of 91 from Indian and Northern Development Human Resources Survey, 1973).

WEEKS WORKED	NUMBER	PERCENT
0 - 10	21	16%
11 - 20	24	19%
21 - 30	22	17%
31 - 40	32	25%
41 - 50	8	6%
Full Time	22	17%
	129	100%

Total weeks employment = 3,639

The labor force is employed for 54 percent of the year while the remaining 46% is spent in unemployment or at subsistence activities. Approximately one-half are employed less than 30 weeks and approximately three quarters are employed for less than 40 weeks. Only 17% of the labor force is employed full time.

A combination of fishing, trapping and working for wages is the means of earning an income for approximately one half of the labor force while about one third of the labor force earned their incomes from wages only. One quarter earn their incomes from fishing and trapping only.

TABLE V

CATEGORY	NUMBER	PERCENT
Employment for wages only*	41	32%
Wage work and fishing/ trapping	56	44%
Fishing & trapping only	32	24%
	129	100%

There is a higher rate of unemployment amongst wage workers. Of those that worked for wages only, 63% worked for 30 or fewer weeks while 58% of fishermen and trappers worked less than 30 weeks and 42% of those who worked for wages and fished or trapped worked less than 30 weeks.

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*Wage work includes fishing for wages

**Indian Affairs & Northern Development Human Resources Survey

TABLE VI Employment by Labor Force in Weeks for 1972

WEEKS WORKED	WAGES ONLY			COMBINATION OF WAGES & FISHING/TRAPPING			FISHING & TRAPPING ONLY		
	NUMBER	PERCENT		NUMBER	PERCENT		NUMBER	PERCENT	
0-10	13	31		-	-		8	25	
11-20	9	22	63%	8	14	42%	7	22	53%
21-30	4	10		16	28		2	6	
31-40	8	20		15	27		9	28	
41-50	2	5		6	11		-	-	
Full Time	5	12		11	20		6	19	
	41	100%		56	100%		32	100%	

The labor force in 1975, 1980 and 1990 is estimated at 150, 190 and 280 respectively. The present resource demand and technology cannot support this labor force ten to twenty years hence. However, by that time resource demand and technology will be so different that it is not possible to predict a labor balance for that era. However, it is possible to indicate that an evolution of economic activities must occur in order to support the labor force.

This labor balance with its related underemployment provides evidence that a northern development strategy is required. The thrust of this strategy must be determined in consultation with northern communities.

THE FISHERY

Commercial fishing at South Indian Lake started in 1942. At that time frozen fish were marketed. In 1943 the first fresh fish were shipped out by aircraft. Prior to the start of the commercial fishery the South Indian Lake residents depended upon trapping for cash income. The initiation of a commercial fishery at South Indian Lake brought economic stability to the community and was its single most important economic development. In the early years the fish companies brought in outside fishermen who hired some local residents to fish for them, while other residents conducted their own operations. The fish companies, outside operators and the residents continued to fish the lake under these arrangements until 1969. In that year the South Indian Lake Fishermen's Co-operative was formed and only residents fished the lake thereafter.

The fishery provides 43% of the total community income when income-in-kind is added to profits and wages; it is the single most important source of livelihood in the community.

In 1972, the fishery provided $85,000 in net income to fishing operators, $30,000 to hired men who worked for fishermen to total $115,000 from the fishing operation. In addition, the fishery provided $84,000 in wages to those involved in packing and transporting the fish. In total the commercial fishery provided $198,700 in cash income to the community.* This $198,700 represents 37% or over 1/3 of the income to the community. In addition, the fishery provided $36,400 in income-in-kind from the use of fish for domestic purposes.** This fish is shared amongst the members of the community and as a result all residents benefit from the supply of fish for domestic use. This supply of fish is especially important to the elderly who must live off an Old Age Pension in a community where the price of food is high.

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*Appendix D.

**Appendix C.

TABLE VII Community Income from Commercial Fishing

YEAR	NET INCOME TO FISHERMEN	CO-OP WAGES PAID	TOTAL INCOME*
1972	$115,000	$83,700	$198,700
1971	$ 85,800	$43,600	$129,400
1970	$ 70,340	$32,000	$102,340

In addition, the Co-operative member's equity increased by $24,000 during the 1970/71 fishing seasons and it increased by $44,000 during 1971/72. However, in the 1972/73 season the Co-operative lost $229,000 on their operations and presently require between $500,000 and $1,000,000 in grants to operate on a break-even basis.

Most of the community labor force is employed in the fishery. During the fishing season up to 110 men are involved in the fishing operation and up to 22 men are working at the lakeside operation. In addition with the new packing plant at Leaf Rapids, there are at least 15 men working in the packing plant, the dining hall, and transporting the fish.**

The quota for the commercial fish catch on Southern Indian Lake is 1,200,000 pounds while the catch over the past four years has been between 200,000 and 250,000 pounds below the quota. (Appendix E).

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*Excludes changes in member's equity. For more information see Appendix D.

**Residents from other northern communities are also employed in the fishery.

As a result a decrease in the yield of fish from the lake after water regulation may not affect fish harvests if the present fishing effort continued. However, floating debris may be a more serious problem encountered by fishermen in their fishing operations.*

However, if fishing was not possible after water regulation for a period of time due to debris or if the fish populations declined drastically in Southern Indian Lake, approximately 420,000 pounds of fish are available to Southern Indian Lake fishermen from nearby lakes. (Appendix E). The net value of this fish to fishermen is between $35,000 - $40,000. In addition, local income from packing and transporting the fish will increase the community income impact to between $55,000 and $60,000.

However, the South Indian Lake Fishermen's Co-operative is experiencing financial difficulties and its future is uncertain as a result of the $1 million dollars spent in constructing a packing plant at Leaf Rapids, purchasing a freight boat on the Lake and constructing another packing station at Loon Narrows. The projected statement of operation for the 1973/74 season shows an operating loss to the Co-op of over $100,000 even though it was assumed that the Co-op will receive a half a million dollar grant for capital costs from the Federal and Provincial Governments. In addition, this projected statement of operation shows expenses for salaries and wages of over $200,000. This wage and salary expense can be compared to an actual expense of $109,000 during the 1972/73 year and an expense of between $30,000 and $40,000 for each of the three proceeding years. (Appendix D).

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*A separate fisheries study is presently being conducted and will be ready by this fall.

**The information-communication program recommended in the report is the logical means of consultation.

RECOMMENDATION

It is recommended that a planning process be initiated in consultation with the community and all agencies involved to ensure that a viable fishery for the residents of South Indian Lake exists after the water of the lake is regulated.[1] This could include a linear programming model to compare alternative plans of operation and their financial implications. In addition, this study will determine the most feasible method of operation for the Co-operative under present conditions and will provide insights for fishery operations in all of Manitoba.

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[1] For detail see Appendix B.

TRAPPING

Trapping represents approximately four percent of the community's income source. Two percent derives from the value of the fur and two percent derives from beaver and muskrat meat. For the five year period between 1967/68 and 1971/72, the average value of fur sold was $35,300 gross and $14,100 net. The number of individuals involved in trapping averaged 114 for that same period.

TABLE VIII Value of Fur Harvest and Number of Trappers - South Indian Lake 1967/68 to 1971/72.

YEAR	TOTAL VALUE*	NET VALUE**	NUMBER OF TRAPPERS
1971/72	$29,100	$11,640	94
1970/71	28,800	11,520	113
1969/70	30,600	12,360	128
1968/69	46,700	18,680	114
1967/68	40,900	16,360	123
Average Values	$35,300	$14,112	114

With the regulation of the water level and the diversion of Southern Indian Lake, approximately 22 traplines will be affected. The annual gross value of fur produced in these traplines over the past five years is $25,000 and the net value is about $10,000.

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*Market Value F.O.B. Winnipeg. (Source: Manitoba Department of Mines, Resources and Environmental Management).

**Net income to the trapper after production and marketing costs.

This $10,000 represents 70% of the total value of the fur harvested and represents 59% of the total number of trappers in the community.

TABLE IX Value of Fur Harvest and Number of Trappers on Affected Traplines as Compared to Total Harvest and Total Number of Trappers.

YEAR	GROSS VALUE OF FUR*	NET VALUE	% OF TOTAL VALUE	NUMBER OF TRAPPERS AFFECTED	% OF TOTAL TRAPPERS
1971/72	$19,800	$ 7,920	68%	60	63%
1970/71	22,100	8,840	76%	68	60%
1969/70	20,300	8,120	66%	78	61%
1968/69	30,000	12,000	64%	61	54%
1967/68	32,400	12,960	79%	73	59%
Average	$24,920	$ 9,968	70%	68	59%

If we pessimistically assume that the affected traplines will not be useable, $15,000 - $20,000 in annual income (including income-in-kind - food, etc.,) to the community will be affected. This is the worse that can happen.**

Based on the last five years of trapping, approximately 65% of the value of the fur derives from beaver and muskrat. (Table X).

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*In affected areas (Source: Manitoba Department of Mines, Resources and Environmental Management

**The 1972/73 season harvest and prices were not included since the data on the fur harvest and average fur prices is not available. However, fur prices have increased substantially over the past year. This increase may increase the magnitude of the loss.

TABLE X Fur Return Value - All Species - 1967/68 to 1971/72

YEAR	BEAVER	MUSKRAT	MINK	LYNX	OTHER FUR	TOTAL	NET (40%)
1967/68	24,498.00	3,993.54	7,904.00	1,828.96	2,652.14	40,876.65	16,350
1968/69	26,114.00	4,171.05	10,115.00	3,649.00	2,665.19	46,714.24	18,685
1969/70	16,160.00	1,692.00	3,540.00	6,375.00	2,814.65	30,581.65	12,230
1970/71	17,304.00	2,953.75	1,672.00	4,800.00	2,049.95	28,794.70	11,517
1971/72	13,580.46	2,707.47	2,105.88	7,311.66	3,256.59	29,052.06	11,620
% OF TOTAL CATCH------	54%	9%	14%	14%	8%	100%	

Source: Manitoba Department of Mines, Resources and Environmental Management

The beaver and the muskrat are the two furbearers that are water based and are most significantly affected by water regulation. However, conversations with the Department of Mines, Resources and Environmental Management personnel and our research indicates that there are significant numbers of unharvested beaver on the Southern Indian Lake trapline section.

In our research we looked at the relationship between the quantity of fur produced on the traplines surrounding the community of South Indian Lake and the potential number of animals that could be harvested. The James Bay Report* states that in the area to be used for Hydro development in that project between .35 and over 2 beavers were caught per square mile. The registered traplines allocated to the trappers of South Indian Lake contain approximately 40,000 square miles of land and water. By taking a low figure of a potential of a half of beaver caught per square mile one may arrive at a figure of 20,000 beavers which can be caught in that area at an average price of $18 per beaver pelt. The potential value of this fur is $360,000. By comparison the actual value of the beaver harvest over the past 5 years was approximately $20,000. This $20,000 represents approximately 1,100 beaver caught annually. Another comparison can be made by comparing the catch per James Bay trapper to a South Indian Lake trapper. James Bay area trappers caught an average of 30 beaver per year. However, in the South Indian Lake area trappers averaged only 11 beaver per trapper. It can be concluded from this data that either the fur productivity of the land for beaver is much lower surrounding South Indian Lake as compared to James Bay or that the fur potential that exists surrounding South Indian Lake is not harvested. The latter seems to be the case.

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*Salisbury _et_ _al_., _Development and James Bay_

The wildlife report to be prepared by the Study Board will provide further details on water regulation effects on trapping.

RECOMMENDATION

> It is recommended that planning processes be initiated in consultation with the community to ensure access to the potential income available from trapping after water regulation. These plans need not necessarily be concerned with increasing the numbers of water based furbearers but could consider improving access to traplines, improving or building new trappers cabins, constructing fur depots and so forth. The fur plan prepared by the Department of Mines, Resources and Environmental Management provides information on how the returns to trappers and fur production can be increased.

HUNTING

Hunting provides $41,000 in income-in-kind to the community in the form of meat and hides. This represents 8% of community income. From conversations with community residents it was discovered that approximately 50 moose are consumed by residents each year. Each moose provides approximately 400 pounds of meat after dressing and cutting. At a value of $1.50 a pound, each moose is worth $600 and 50 are worth $30,000. The value of the hides processed locally are used for moccasins and jackets and are estimated to equal $4,100. (Appendix C).

After water regulation there may be a decrease in the moose populations in the area due to the increase in water levels and resulting decrease of browse on the shorelines. However, a more important effect on the moose populations may arise from increased hunting pressure. This pressure will come from Leaf Rapids residents and from Hydro construction workers.

In addition, waterfowl provides meat for the residents. It is estimated that each family has 20 meals of waterfowl each year. The total value of this waterfowl is estimated at $7,000. (Appendix C). The effect of water regulation on the income-in-kind derived from waterfowl is unknown.

RECOMMENDATION

> Since hunters from outside the community may take a significant number of moose, otherwise available for food, it is recommended that game laws in respect to such hunting be strictly enforced. A more severe alternative is to prohibit hunting to non-community residents in the area surrounding South Indian Lake.

FORESTRY

All homes in South Indian Lake, other than transient resident homes, are heated by wood. It is estimated that this fuel has a value of $17,500 or 3% of the total community income. (Appendix C).

CONSTRUCTION

It is estimated that the community income from construction employment amounted to $25,300 or 5% of community income in 1972. At the present time, five residents are employed with Manitoba Hydro and two residents are employed with Sherrit-Gordon at Leaf Rapids. In addition, eight residents were employed with Manitoba Hydro for some period in the past year. The number of residents who were or are employed with Hydro contractors is unknown.

Prior to the Leaf Rapids and Hydro projects the only construction projects near the community were government housing and air strip projects. However, this situation has already changed and will remain so until the end of 1975 due to the construction activities at Missi Falls, South Bay and Notigi. The labor force at these sites will vary between 200 and 800 until the project is finished. However, upon termination of the project, no resident operation and maintenance staff will be required. Rather, they will be flown in periodically from Thompson.

The estimated work force population for the Hydro construction activities and its break-down by trades is listed in Tables XI, XII and XIII.

TABLE XI Estimate of Work Force Population

	Notigi	South Bay	Missi Falls	Clearing	Total
1973 Jan - April	20	20	60	200	300
May - Aug	60	60	100	50	270
Sept - Dec	80	140	100	200	520
1974 Jan - April	150	200	200	200	750
May - Aug	250	200	350		800
Sept - Dec	200	200	250	100	750
1975 Jan - April	150	200	150	200	700
May - Aug	100	100	100		300
Sept - Dec	80	50	80		210

Source: Manitoba Hydro

TABLE XII Percentage Breakdown by Trades for Notigi, South Bay* and Missi Falls.

TRADES	PERCENTAGE
Labourers	18%
Operating Engineers	15%
Teamsters	10%
Carpenters	18%
Rebar Workers	5%
Ironworkers	3%
Electricians	4%
Pipefitters & Mechanical Workers	5%
Caterers	10%
Inspection & Supervision	12%
	100%

TABLE XIII Estimated Breakdown by Trades - Clearing Project*

TRADES	PERCENTAGE
Labourers	60%
Teamsters	20%
Caterers	10%
Supervision	10%
	100%

*Source: Manitoba Hydro

The Hydro construction wage rate for a labourer varies between $3.90 and $4.55 per hour while the Ruttan Lake employees receive $4.00 per hour at a minimum. As a result the Fishermen's Co-operative believes it necessary to increase its wages for their lake operations from $110 per week to $800 - $900 per month in order to attract employees. This increase in wages is partially responsible for the financial problems experienced by the Co-operative.

The Province is presently taking advantage of placing northerners in Hydro construction jobs through the Northern Manpower Corp. The Corps is recruiting residents for employment on the Hydro project. While only two residents have stated they have carpentry experience and most others have stated that their work experience consists of labor work only, job related training is provided in the Manpower Corps. program.

SERVICE INDUSTRIES

The Hudson Bay Company in South Indian Lake employs a housekeeper and 4 to 5 clerks. It is estimated that the wages paid by the Hudson Bay Company to community residents, not including the Bay Manager who can be classified as a transient resident are about $15,000. Although the construction project over the next 3 years may result in a greater community income it is not expected that many new service jobs will be created in the community as a result of the increased expenditures.

TOURISM

Although South Indian Lake has no tourist industry at the present time, it has the potential to support fly-in fishing and hunting lodges. However, after the water level is increased it is doubtful whether the lake would have a high potential for tourism because of floating debris, dead trees on the shoreline, etc. However, it is possible to have fly-in tourist lodges located on lakes surrounding Southern Indian Lake since these lakes will not be affected by water regulation. In addition, if the shorelines on Opachauana Lake are cleared this lake will have the potential to support a tourist lodge.

GOVERNMENT

Government provided $183,200 in 1972 into the economy of South Indian Lake. Thirty-five thousand dollars of this sum was in the form of wages and $148,200 was in the form of transfer payments.

The $35,000 in payments for wages derived from National Health and Welfare who employ four residents, the Telephone System who employ 1 person part time and the Frontier School Division who employ five people part time and one full time. In addition, Indian Affairs employs some people for Band administration.

The $148,200 in transfer payments consisted of $84,000 in payments for social assistance $37,000 in Old Age Assistance and $27,200 in Family Allowances. Of this $84,000, $72,765 went to Treaty Indians while $11,252 went to non-Treaty people. (Appendix F).

On the average, 42% of the long term residents of South Indian Lake were receiving social assistance for some period of each month. By comparison, 57% of the Treaty Indians received some social assistance each month while only 8% of the non-Treaty residents received some social assistance each month. Another comparison can be made with regard to social assistance payments for Treaty and non-Treaty residents. Treaty residents received per capita social assistance payments of $185 per year while the non-Treaty residents received assistance amounting to $59.00 per capita per year.

By comparison, per capita social assistance payments for all of Manitoba are between $65 and $70 per capita.*

Social assistance payments are separated into health, social and unemployed employable categories by the Department of Indian Affairs and Northern Development. On the average, 47% of the payments to Treaty residents were made to families for health reasons, 25% for social reasons (unmarried mothers, orphans, etc.), and 28% to unemployed employables. However, payments vary by month (Figure I). No such breakdown is available for the Provincial payments to the community. However, approximately five and one half percent of provincial social assistance expenditures are made to unemployed employables.**

One of the myths associated with South Indian Lake is that it is a self sufficient community unlike other remote native communities in Northern Manitoba. However, after analyzing the per capita social assistance payments to Treaty residents in South Indian Lake and comparing these payments to reserves we find that South Indian Lake has the third highest per capita social assistance payments for thirteen reserves located in Northern Manitoba. The Shamattawa and York Factory

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*Barber, Welfare Policy in Manitoba, 1972.

**Ibid.

Bands are the two highest while Brochet is the fourth highest in per capita social assistance payments. Please refer to Figure II for further details.

In December, 1972, 86% of the Treaty residents received social assistance. This was the highest percentage for any month during that year, while in September, 1972, only 21% of the population received social assistance. This month occurs during the period when the commercial fishery is in operation.

PERCENT OF TREATY PEOPLE, RESIDENT IN SOUTH INDIAN LAKE, RECEIVING SOCIAL ASSISTANCE BY MONTH FOR THE PERIOD BETWEEN APRIL '72 TO MARCH '73

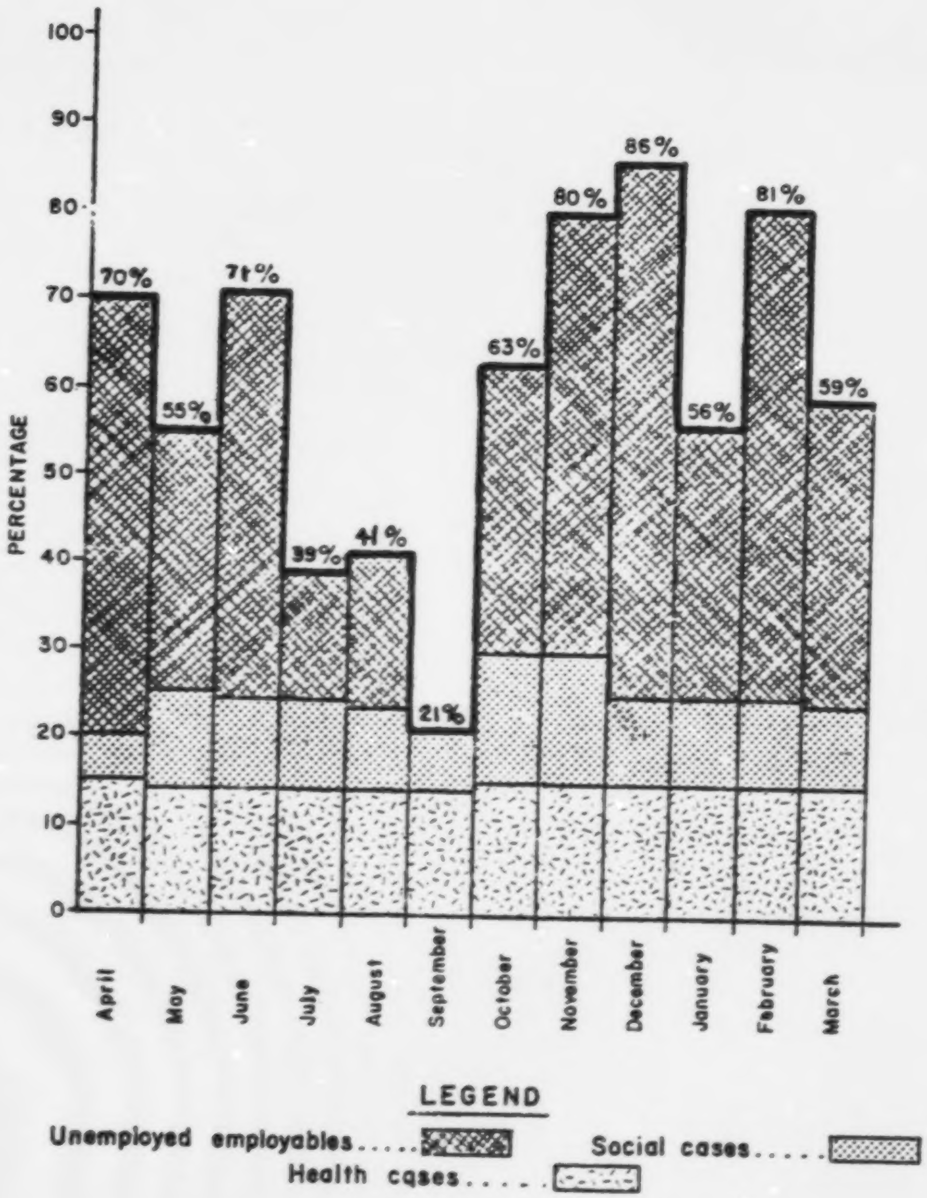
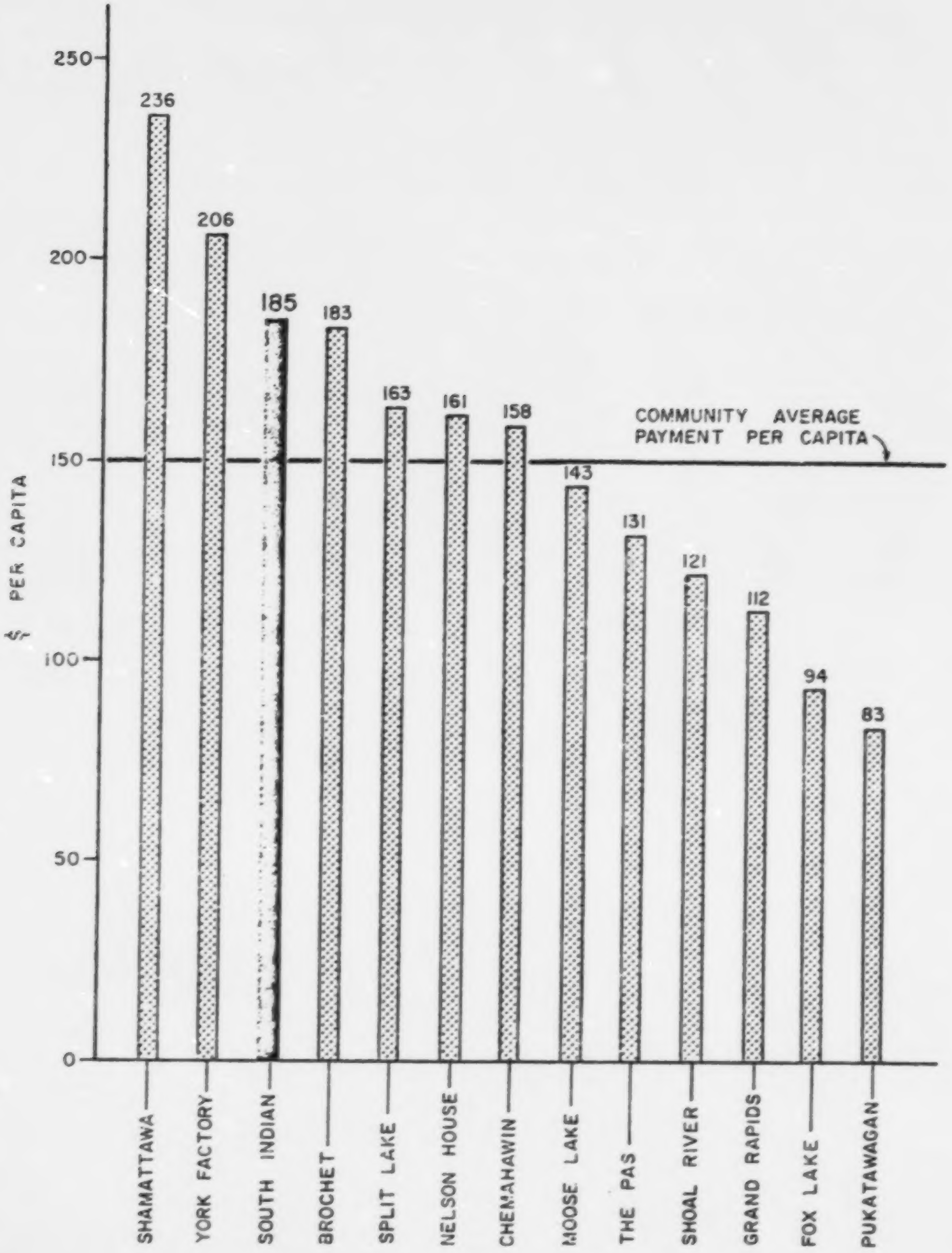


FIGURE I Source: Department of Indian Affairs and Northern Development



PER CAPITA SOCIAL ASSISTANCE PAYMENTS TO RESERVES — 1972

FIGURE II Source: Department of Indian Affairs and Northern Development

TIMBER CLEARING

As well, Hydro is planning an on-going timber clearing program. This program is to last an indefinite number of years and is to employ local residents, especially those from South Indian Lake. It is suggested that the residents of South Indian Lake be consulted as to the areas to be cleared. At the present time an area surrounding the community and the areas surrounding the fish packing stations (Camp 3, Camp 6, Camp 9, Loon Narrows and the North end), seem to be logical sites. Other areas include: i) areas to provide access to the shorelines in case a storm arises and boats must head for shore, ii) camping sites for fishermen, iii) camping sites for visitors, iv) the small creek at the base of Long Point so that freight boats do not have to go around this point to travel between Loon Narrows, the Community and Leaf Rapids. Timber from the clearing activities near the community should be made available to be used near the community for fuel by the community residents.

Chapter V

COMMUNITY INFRASTRUCTURE

COMMUNITY FACILITIES AND TRANSPORTATION

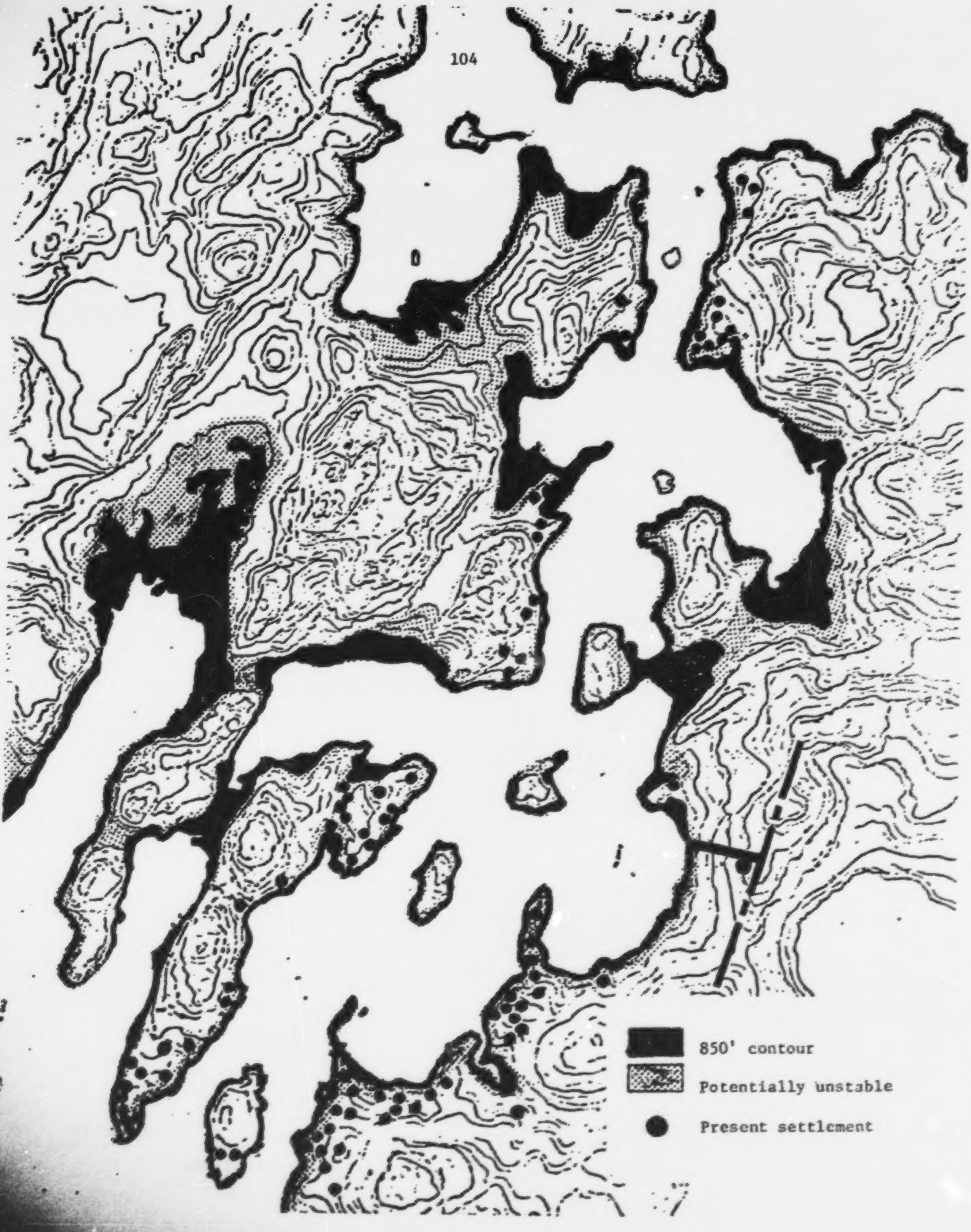
INTERNAL:

The map of South Indian Lake on the following page outlines the general location of homes within the community at the present time. A new development plan is in the process of being put together by the Community Council with assistance from the Department of Northern Affairs and a number of new homes will be constructed this year. Arrangements will be made in consultation with the owners to move those homes presently below the 850 contour to new locations in the planned area.

The present water line and the 850 contour are marked on the map as well as areas above the 850 contour which contain soil that is potentially unstable. Since the actual effect of the water level increase in these areas is not known, precautions are being taken to ensure an alternate location for those dwellings that may be affected.

Electrical power lines have been located throughout most of the community for service beginning this fall (it is hoped that the effects of this construction activity can be cleaned up and some landscaping done because some eyesores have been created).

Changes in water levels and flow will affect internal transportation and communication as parts of the community are separated from each other by water. The water at present is relatively still and quite deep, but until the residents adjust to a fairly steady current which will have an undetermined effect on boats and travel over the ice, significant precautions must be taken. These include major local (Community Council) responsibility and involvement in determining the nature of the changes, informing all residents (not just once), marking channels or obstructions if necessary and


■ 850' contour
▨ Potentially unstable
● Present settlement

measuring ice and marking trails across it (this monitoring of ice would have to be farily continuous at least until safe areas could be marked with security.)

EXTERNAL:

In addition to considerable boat traffic on the lake (including fish, groceries and materials freighting by the Fisheries Co-op), an airstrip links the community to the "outside" and a winter truck road was constructed last year from Ruttan Lake to South Bay and up to the settlement. This winter road was completed March 25 and the last truck in was on April 8.

Estimated annual winter freight volume is:

consumer goods	195 tons
capital goods	20 tons
fuel	215 tons

Freight rates were:

Calm Air ex Lynn Lake	.07/lb. perishables
	.0475 - .07/lb. other goods
Gardewine ex Winnipeg	.04/lb. general
Pauls Hauling ex Thompson	.17/gal. bulk fuel

A local resident provides a cartage service at the rate of ½¢ per pound. This is included in the Calm Air rate but it is doubtful that this rate will apply from the airstrip this summer.

CONSIDERATIONS:

1) With potential changes in ice conditions during freeze-up and thaw, it might be necessary to develop a minimum standard emergency airstrip on the west side of the narrows.

2) With higher water, the creek area at the base of Long Point would be under water and should be cleared (and scraped if necessary) to allow boats, including freight boats, to travel from the Loon Narrows fish station to Leaf Rapids or the settlement without going all the way around Long Point.

3) In addition to a possible arrangement with the Council to mark and monitor key features necessary internal travel, a similar arrangement might be discussed with the Fisheries Co-op regarding transportation on the lake - both winter and summer.

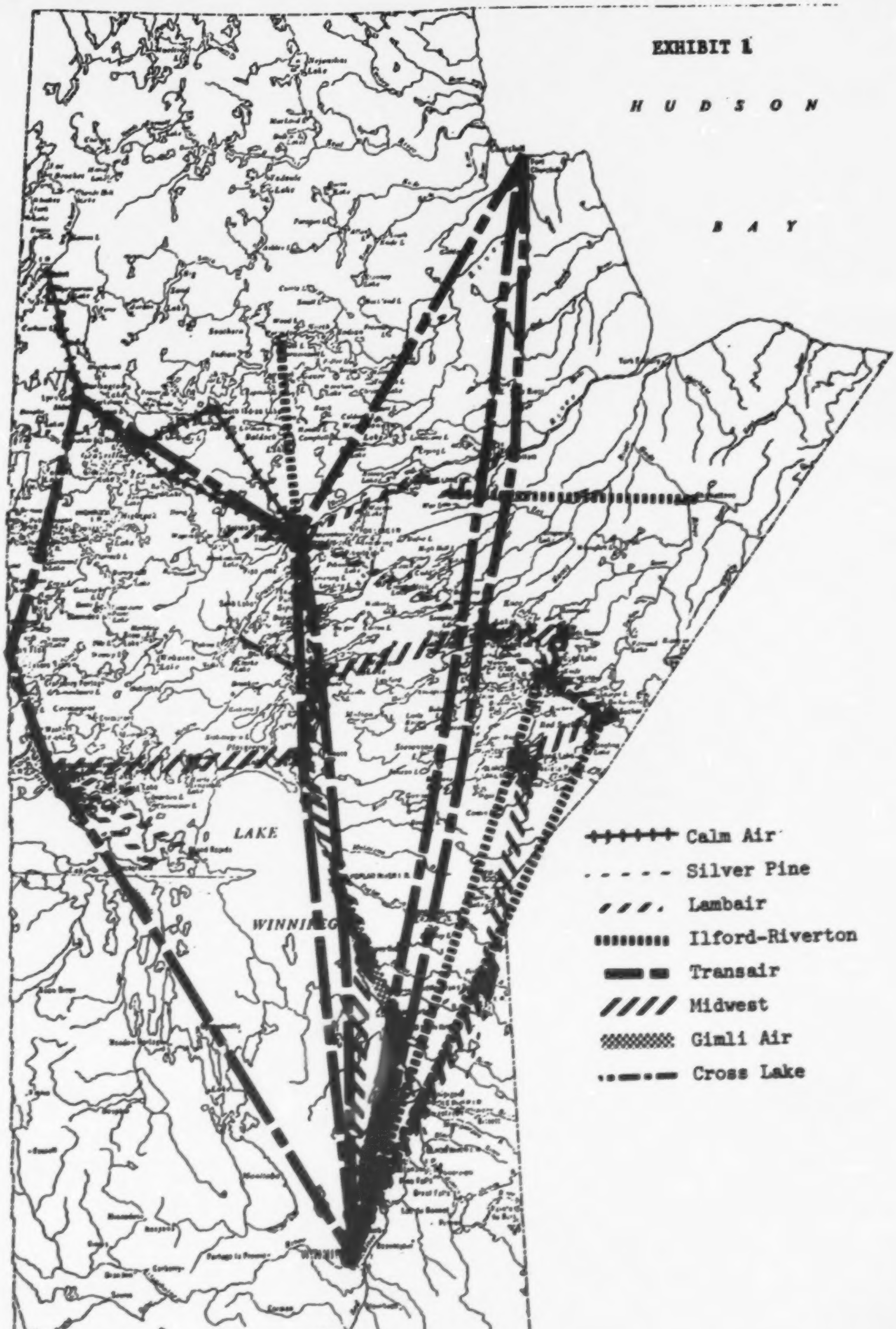
4) Docks, homes and other facilities that might be affected by change in lake levels could be replaced according to the compensation and communications mechanism outlined elsewhere in this report. However, the Northern Manpower Corps might be asked, if the community wishes, to operate training programs so local residents can acquire the jobs resulting -- even if it appears on the surface to "cost" more, this should not be an over-riding consideration.

5) A road to the community from South Bay may be required at some time in the future. However, this road should only be constructed when the community decides they need it. If it is built prior to that the dramatic change in "access" could create further stress in addition to that which has resulted from all the other rapid changes.

The following appendices are attached:

1) Map of air linkages by scheduled carriers,
2) Schedule of unit toll rates charged by Air Carriers,
3) Passenger services provided.

EXHIBIT 1


HUDSON BAY
LAKE WINNIPEG
Calm Air
Silver Pine
Lambair
Ilford-Riverton
Transair
Midwest
Gimli Air
Cross Lake

IX IX

Unit Toll Rates Charged By Air Carr   Operating in Northern Manitoba

January, 1973

Carrier	Class of Licence	Base	Point Served From Base	Frequency of Service (Days per week)	Unit Toll Rates One-way Passenger Fare	Express Rate	General Freight Rate
Calm Air	3	Lynn Lake	Leaf Rapids	6	$10.00		5¢/lb. all volumes
	3	Lynn Lake	South Indian Lake	6	$17.00	7.0¢/lb.	Under 100 lbs.:7¢/lb. Over 100 lbs.:4.75¢/lb.
	3	Lynn Lake	Thompson	6	$30.00	?	Under 100 lbs.: 15¢/lb. Over 100 lbs.:10¢/lb.
	3	Lynn Lake	Brochet	6	$17.00	7.0¢/lb.	Under 100 lbs.:7¢/lb. Over 100 lbs.:4.5¢/lb.
	3	Lynn Lake	Missi Falls	Irregular	$27.00		8.5¢/lb. all volumes
	3	Lynn Lake	Granville L.	Irregular	$ 9.00		5¢/lb. all volumes
Cross Lake	3	Wabowden	Cross Lake	6	$10.00	3.5¢/lb.	
Gimli Air	3	Arnes/Riverton	Bloodvein	2	$17.20		Under 1000 lbs.:5.5¢/lb. Over 1000 lbs.:5¢/lb.
	3	Arnes/Riverton	Berens River	2	$25.00		Under 1000 lbs.:7.5¢/lb. Over 1000 lbs.:7¢/lb.
	3	Arnes/Riverton	Poplar River	2	$33.40		Under 1000 lbs.:10 ¢/lb. Over 1000 lbs.:9¢/lb.
Ilford-Riverton	3	Ilford	Shamattawa	2 or more	$28.00		Under 100 lbs.:14¢/lb. 100-6000 lbs.:14¢/lb. 6000-100,000 lbs.:11¢/lb. Over 100,000 lbs.:8¢/lb.
	3	Ilford	Split Lake	2 or more	$ 5.00		Under 100 lbs.:6¢/lb. 100-6000 lbs.: 5¢/lb. 6000-100,000 lbs.: 4¢/lb. Over 100,000 lbs.:3¢/lb.
	3	Thompson	Missi Falls	Irregular	$23.00		Under 100 lbs.:10¢/lb. 100-6000 lbs.:10¢/lb. 6000-100,000 lbs.: 8¢/lb. Over 100,000 lbs.:7¢/lb.
	3	Winnipeg	St. Theresa	2 or more	$45.00		Under 100 lbs.:13¢/lb. 100-6000 lbs.:12¢/lb. 6000-100,000 lbs.:11¢/lb. Over 100,000 lbs.:10¢/lb.
	3	Winnipeg	Gods Narrows	2 or more	$56.00		Under 100 lbs.:15¢/lb. 100-6000 lbs.:15¢/lb. 6000-100,000 lbs.: 9¢/lb. Over 100,000 lbs.:9¢/lb.
	3	Winnipeg	Red Sucker L.	Irregular	$55.00		Under 100 lbs.:14¢/lb. 100-6000 lbs.:14¢/lb. 6000-100,000 lbs.:14¢/lb. Over 100,000 lbs.:14¢/lb.
Lambair	3	Thompson	Kelsey	3	$12.00		6¢/lb. all volumes
	3	Thompson	Split Lake	3	$15.00		8¢/lb. all volumes
	3	Thompson	Ilford	3	$15.00		7¢/lb. all volumes
	3	Thompson	Gillam	3	$20.00		11¢/lb. all volumes
	3	Thompson	Cross Lake	3	$20.00		9¢/lb. all volumes
	3	Thompson	Norway House	3	$30.75		15¢/lb. all volumes
	3	Thompson	Nelson House	6	$10.00		4¢/lb. all volumes
	3	Thompson	Oxford House	2	$29.00		9.7¢/lb. all volumes
	3	Thompson	Gods Narrows	2	$39.00		12.8¢/lb. all volumes
	3	The Pas	Moose Lake	3	$15.00		5¢/lb. all volumes
	3	The Pas	Easterville	Irregular	$20.00		9.7¢/lb. all volumes
	3	The Pas	Grand Rapids	Irregular	$25.00		12¢/lb. all volumes
Midwest	2	Winnipeg	Berens River	6	$23.00	.14	.11 Min. Shipment $5.00
			Poplar River	6	$30.00	.15	.12 Min. Shipment $5.00
			Norway House	6	$40.00	.19	.14 Express min. $8.00-freight min. $10.00
			Cross Lake	6	$46.00	.19	.15 Min. Shipment $5.00
			Oxford House	6	$56.00	.15	.12 Min. Shipment $5.00
			Gods River	6	$56.00	.15	.12 Min. Shipment $5.00
			Gods Narrows	6	$56.00	.15	.12 Min. Shipment $5.00
			Red Sucker L.	6	$55.00	.15	.12 Min. Shipment $5.00
			Garden Hill	6	$45.00	.14	.11 Min. Shipment $5.00
			St. Theresa	6	$44.00	.14	.11 Min. Shipment $5.00
			Little Grand Rapids	6	$25.00	.08	.06 Min. Shipment $5.00
	2	Norway	The Pas	3	$20.00	.08	.05 Min. Shipment $5.00
Silver Pine	3	Pine Falls	Bloodvein	2 or more	$15.00		5¢/lb.
			Pauingassi		$22.00		6.5¢/lb.
			Little Grand Rapids		$20.00		6¢/lb.
						Under 100#	Over 100#
Transair	1	Winnipeg	The Pas	7	$36.00	.12	.11 Min. charge per shipment - $10.00
			Flin Flon	7	$42.00	.14	.11 Min. charge per shipment - $10.00
			Lynn Lake	7	$53.00	.17	.13 Min. charge per shipment - $10.00
			Thompson	7	$44.00	.13	.12 Min. charge per shipment - $10.00
	1	Winnipeg	Gillam	7	$48.00	.15	.12 Min. charge per shipment - $10.00
			Churchill	7	$67.00	.20	.16 Min. charge per shipment - $10.00
	2	Winnipeg	Norway House	6	$40.00	.14	-- Min. charge per shipment - $10.00

APPENDIX III

Passenger Services Provided by Carriers to Northern Manitoba Communities January, 1973

Carrier	Class of Licence	Base	Route Patterns
Calm Air	3	Lynn Lake	(1) Lynn Lake-Leaf Rapids-South Indian Lake-Thompson-(return same route) (2) Lynn Lake-Leaf Rapids-Thompson (return same route) (3) Lynn Lake-Brochet and return
Cross Lake	3	Wabowden	(1) Wabowden-Cross Lake and return
Gimli Air	3	Arnes/Riverton	(1) Arnes/Riverton-Bloodvein-Berens River-Poplar River-Arnes/Riverton
Ilford-Riverton	3	Ilford	(1) Ilford-Shamattawa and return (2) Ilford-Split Lake and return
	3	Thompson	(1) Thompson-Missi Falls and return
	3	Winnipeg	(1) Winnipeg-St. Theresa-Gods Narrows-Red Sucker-Winnipeg
Lambair	3	Thompson	(1) Thompson-Kelsey-Split Lake-Ilford-Gillam-(return same route) (2) Thompson-Cross Lake-Norway (return same route) (3) Thompson-Nelson House and return (4) Thompson-Oxford House-Gods Narrows (return same route)
	3	The Pas	(1) The Pas-Moose Lake and return (2) The Pas-Easterville and return (3) The Pas-Grand Rapids and return
Midwest	2	Winnipeg	(1) Winnipeg-Berens River-Poplar River-Norway House-Cross Lake-Oxford House-Gods River-Gods Narrows-Red Sucker-Garden Hill-St. Theresa-Little Grand Rapids-Winnipeg (2) Same as above only in reverse i.e. Winnipeg-Little Grand Rapids etc.
	2	Norway	(1) Norway-The Pas and return
Silver Pine	3	Pine Falls	(1) Pine Falls-Bloodvein-Pauingassi-Little Grand Rapids-Pine Falls
Transair	1	Winnipeg	(1) Winnipeg-The Pas-Flin Flon-Lynn Lake-Thompson-Winnipeg (2) Winnipeg-Thompson-Lynn Lake-Flin Flon-The Pas-Winnipeg (3) Winnipeg-Norway House-Thompson-(return same route) (4) Winnipeg-Norway House and return (5) Winnipeg-Gillam-Churchill (return same route) (6) Winnipeg-Thompson and return (7) Winnipeg-Churchill-Gillam-Winnipeg (8) Winnipeg-Thompson-Churchill (return same route)

Chapter VI

COMMUNICATIONS, LEADERSHIP
and
DECISION-MAKING

VI COMMUNICATION, LEADERSHIP & DECISION-MAKING

This section is a brief descriptive analysis of some psychological, social and political conditions which currently prevail at South Indian Lake. The conclusions must be considered tentative pending a much more thorough study of the community than has been possible by this study group during the time available.

Recommendation: That the social research initiated by this study be continued using an action-research model design that would

a) reinforce the client participation in research and action programs that is implicit in such a model of social intervention in the life of a community

b) develop an effective information-communication process between the community and the world outside

c) contrive to achieve mutual understanding between the Community and the world outside in their dealings with one another

d) make provision to research existing relevant literature

  i) for its application to the South Indian Lake situation

  ii) with a view to updating it and adding to it through analyses of the South Indian Lake situation.

Material for the section was gathered from a variety of sources including:

i) interviews

ii) group discussion
(See Appendix G for interview and discussion schedules)

iii) literature review cited in the Bibliography

iv) particularly relevant articles contained in Appendix H as follows:

A. The Chemahawin (Easterville) Relocation (A Manitoba Experience)

B. Ethnic Group Land Rights in the Modern State: Three Case Studies (An American Experience)

C. Administrative Problems of the Resettlement of Tema (An African Experience)

D. Development and James Bay: Socio-Economic Implications of the

Hydro-Electric Project (Selected Extracts)

E. Use of Social Scientists by the War Relocation Authority - Selected Extracts (An experience in the use of social scientists in relocation and resettlement projects.)

The knowledge and beliefs which people gain and form are the result of a process of sorting out, crediting or discrediting, storing, combining, rationalizing and interpreting all the information which reaches them about a particular issue. Thus their knowledge and beliefs are shaped by the particular information which they receive, which in turn is selected by the sources which disseminate this information. Thus a person's outlook, attitude and opinion is partly, if not wholly, determined by his sources of information; this same process holds true for a community in general.

South Indian Lake is one of the better informed Northern Communities which maintains its contact with the outside through a variety of sources - the most important sources being the news and Native Communications programs on Thompson radio. In addition to this primary source of information the community has been receiving information relating to the flooding from a variety of other sources: i) newspaper clippings sent to the Community Council and the Flood Committee by concerned individuals, ii) the Manitoba Metis Federation News which has recently taken particular interest in northern hydro developments, iii) by word of mouth from agency people coming into the community, iv) by word of mouth through visits with friends and relatives from other communities, v) from meetings that some residents attend in Winnipeg, e.g. the hearings, their lawyers, political and interest group gatherings, vi) from special information visits by Hydro and other officials.

With few exceptions, these information sources do not provide (nor are they designed, obliged, or responsible to provide) deliberate, specific, objective information. In the few instances where a deliberate attempt has been made to inform the South Indian Lake people directly about the project, the people desired and requested more information of a specific nature than was forthcoming. The assimilation of information by selective exposure has had an important part in developing the beliefs and feelings which people hold.

KNOWLEDGE - ABOUT THE PROPOSED HYDRO DEVELOPMENT

A few of the leaders with a penchant for details may have a fairly good idea how the proposed hydro development will work and therefore some idea of what changes it will bring to the community of South Indian Lake. However, it is apparent that the community in general does not really know what will happen. They know that there will be flooding; they know that this flooding will have some effect upon their lifestyle. It is important to realize that even the technical details which have been digested are very difficult or impossible for an individual (or community) to convert into the specific and exacting type of detail which is desired; the type of detail which is needed in order to reduce stress, worry, anxiety, uncertainity, tension and frustration.

BELIEFS ABOUT THE HYDRO DEVELOPMENT

Beliefs or opinions can be distinguished from knowledge in that they contain an evaluative or emotional component. This distinction is important; beliefs tend to be much more resistant to change because there is an aspect of personal conviction in a belief which is absent in mere knowledge. Once an opinion has been formed there is a tendency to accept incoming information which supports this belief and to reject that which does not. It is important to realize that to the individual beliefs are sometimes difficult to separate from facts; if he perceives something to be so, then to him it is so. This is another conspiring factor which further reinforces a belief and strengthens its resistance to change.

Arising out of the general nature of the knowledge about the hydro development is the belief, or perhaps more accurately described as the fear, that "after the flooding of the community the people will be scattered all over the place and not know where their relatives are living". It may be that the actual amount of dislocation involved, if flooding to 850' ASL occurs, will not be great. However, many of the people do not believe this to be so; they believe that there will be extensive relocation and/or dislocation.

There are a number of other beliefs prevalent in the community about which they have received very little information. Some examples of these beliefs are:

i) Many belief that there will be a significant and lasting drop in the fish population when flooding occurs.
ii) Many believe that there will be a decline in the fur bearing population.
iii) Many believe that the higher water level will melt the subsurface permafrost in the areas which will become the new shorelines. If these subsurface areas melt extensive slumping would take place. On this basis there is the belief that the actual amount of ground area lost to the rising water will be considerably greater than would appear to be the case if one only considers the land below the 850' ASL contour.

To our knowledge research has not been done or has not been completed which would either allay or substantiate these beliefs. However, certain information is available regarding the changes experienced in other areas following water regulation. If this information were available to the people - even in cases where the impacts initially were negative - it could help to form a body of knowledge (rather than beliefs, as erroneous as they might be); this body of knowledge would be less resistant to change if change became necessary in the light of further information and would be positively useful in community decision-making.

The withholding of information or the release of partial information by government or the Developer even when the reasons are legitimate increases the credibility gap between the community and all those systems outside the community which the community lumps together as Government and Hydro. The legal wranglings in court, as representatives as they are of "due process", are nevertheless generally incomprehensible to community observers and when conveyed, as they invariably are, to the community tend to strengthen existing community negative attitudes.

Recommendation:

1. That the community of South Indian Lake be involved in determining what its current level of information and knowledge is
    a) about its position in change and development in the North generally

b) about the implications, etc. of the hydro development project particularly.

2. That to facilitate (1) a comprehensive factual information document be compiled in popular language similar to but more comprehensive than "Some Facts About The Town Plan For South Indian Lake" prepared by Research and Planning, Department of Northern Affairs.

The document should indicate where information is tentative and/or subject to change, and make provision for updating at regular intervals.

3. That to facilitate (1) and the use of (2), the community be assisted to understand and interpret and internalize (integrate) the information.

FEELINGS CONCERNING THE HYDRO DEVELOPMENT

People are bound to have difficulty distinguishing fact from fancy. The facts which people know and the beliefs which they hold give rise to feelings. In the case of hydro development in South Indian Lake these feelings are directed toward the project, toward government in general and toward people whom they can associate with hydro or government. These feelings have been reinforced, or in some cases formed, by other processes as well.

There have been alterations in the planning or water regulation for Southern Indian Lake. The alterations have not only been extensive, they have been wrought with controversy. Arising out of this controversy a great number of people outside of South Indian Lake have developed a certain level of knowledge and definite opinions about the proposed development. Those "outsiders" which have had contact with the community, for whatever the reason, have conveyed (deliberately or inadvertently) their opinions, beliefs and knowledge. Many of these individuals tend to be viewed by the community as authorities even in matters far removed from their area of expertise. Many of these individuals convey messages which agree with the community's position, reinforce and strengthen it and therefore are "made" authorities in the people's mind.

The result of all these processes has been a bombardment of the community with a multiplicity of ideas, attitudes and "facts" - sometimes contradictory to one another. The difficult process of receiving and storing all this information and of trying to sort out fact from fancy has given rise to stronger feelings of uncertainty, doubt, anxiety, fear, frustration and mistrust.

For a people who have learned the ways of nature in their physical environment, a people who have lived for generations with relatively few changes in life style, the "security of knowing" has suddenly been replaced by the anxiety of not knowing exactly what is going to happen and of not knowing what the consequences of that "happening" will be on their life style.

GOALS RE THE HYDRO DEVELOPMENT

These feelings of fear, doubt, anxiety, uncertainty and mistrust i.e. feelings of "not knowing" have resulted in a universal community goal to stop the flooding, to be left alone, and to maintain a traditional life style which they have developed and which they know.

Because they are not reconciled to the fact that flooding will indeed occur, the community has not developed any overt plan for adjusting to (or utilizing assistance in adjusting to) the necessary changes which will occur when flooding does take place. On the other hand, there is some indication that the community is not sure that flooding will not take place. In the event that it does, the community may have its own compensation plan which they may not be disclosing lest it prejudice their position (re the flooding) either with the courts, with the government and perhaps even with public opinion in general.

Indeed, if the flooding is inevitable there is considerable indication that the community's sub goals would be to get as much as they can out of the projects in three ways: i) in the form of compensation for economic declines (fishing, trapping, and land food), ii) in the form of compensation for social disruptions (new houses, rink and swimming pool), and iii) to earn as much as possible from Hydro work available in the area during the construction phase.

It is important to note that if flooding does occur, and therefore compensation arrangements must be negotiated, it is a stated community goal that any and all compensation negotiations for the community and for individuals in the community will be pursued through the community lawyers. Implicit in this stand, and probably arising out of the growing feelings of mistrust toward Hydro and government, is the opinion that compensation negotiations will bring higher returns if the community presents a united front.

Recommendation:

1. That a process of compensation for immediate damages (e.g. to traplines) be instituted immediately.
2. That an appropriate mechanism for achieving this would be an observer team consisting of a Community representative and a representative of Northern Affairs who would check out all claims by residents of the Community and report them to the Council and to Northern Affairs for settlement with Manitoba Hydro.
3. That discussions be instituted with the community with a view to establishing an administrative process that would include a mechanism for the less immediate, longer range compensation measures. Various administration models might be examined including in order of what would appear to this study group to be most appropriate

   - A specific administrative line function in Northern Affairs for matters pertaining to the Churchill River Diversion with an advisory group of Community and Manitoba Hydro representatives.
   - A Labour Management model, i.e. an Authority consisting of a community recommended appointee, a Government appointee and a third person-to be chairman-who is mutually acceptable to the Community and to Government.
   - A Grand Rapids Forebay Committee type model.
   - The Nelson Agency Model.

For a brief outline of the advantages and disadvantages (as seen by the study group) of these four models, see Appendix I.

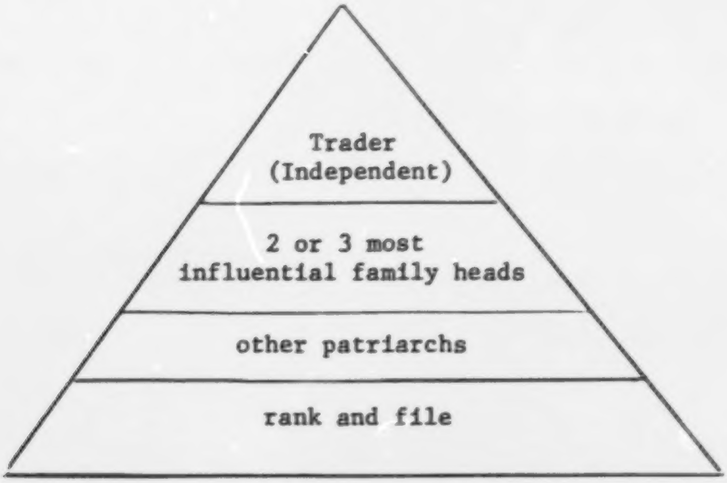
LEADERSHIP AND THE POWER STRUCTURE

In a traditional community garnering its livelihood from the land

and living in relative isolation from outside services, the social structure tends to be simple and functional. People live in extended family groupings, each one looking to their family head for leadership. When a number of these families are living together as a community, it is customary for one or two of the families to gain more influence than the others and therefore their family heads tend to become the dominant leaders in the settlement.

Another important figure in a settlement of this nature is the trader. Through the trader people in the community are able to sell their surplus products in return for staple goods which they require. Because he is more conversant with the world outside, he is called upon to serve many other functions as well. He may be a counselling and guidance source; he refers people with particular concerns to appropriate outside agencies for help; he writes letters and completes forms, etc. for individuals; often he has had the only communication contact with the outside, and very importantly, he has been able to liaise between residents and government agents during the latter's itinerant visits. The trader therefore often is the go-between for most transactions with the outside world. The community becomes increasingly dependent on the trader and he becomes an integral and powerful influence in the decision-making of the community even though he usually remains aloof from community formal decision-making structures.

The preceding paragraphs generally describe the situation at South Indian Lake up to the mid 1960's. The power structure of the community at that time might be schematicized as follows.

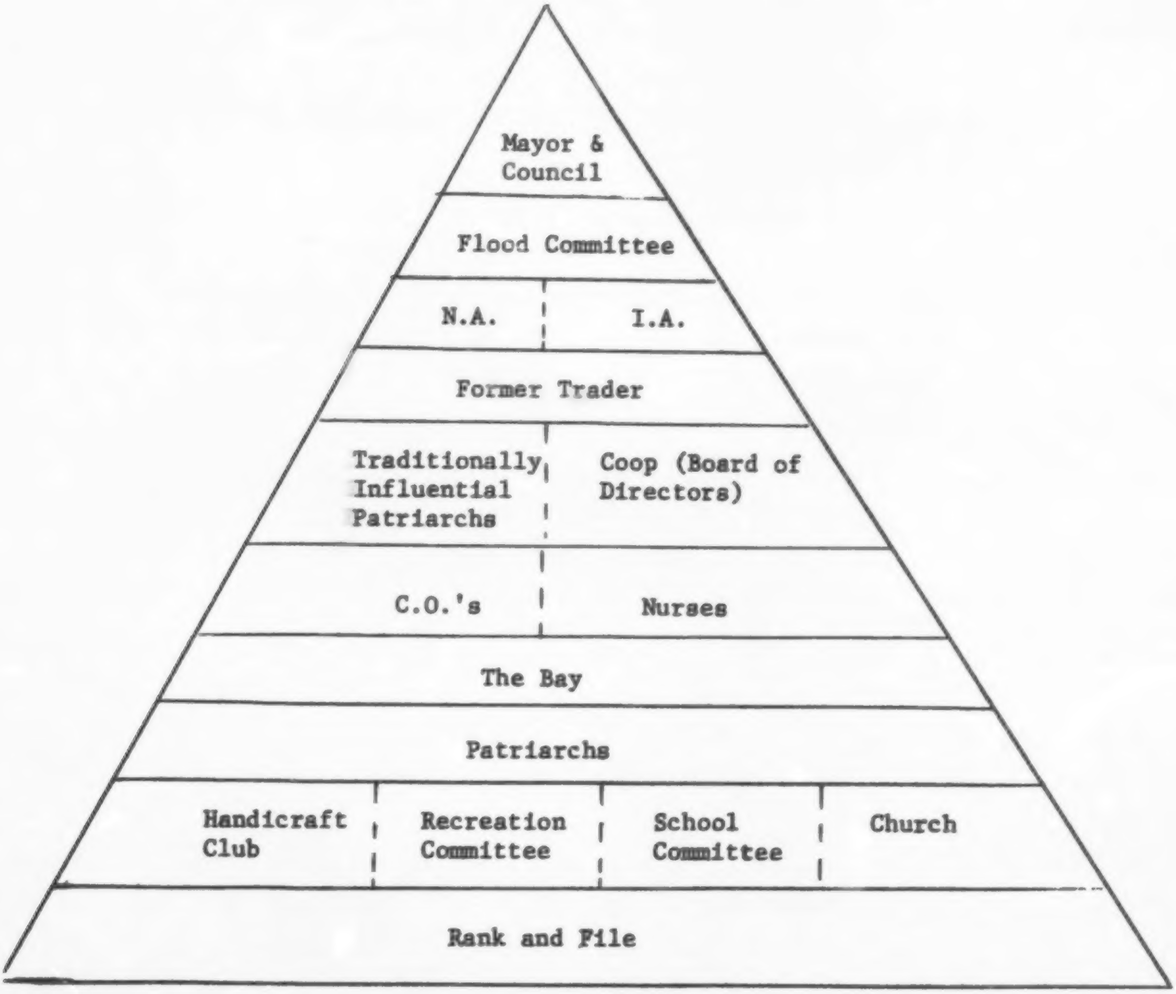


Since that time a number of factors have initiated and accelerated a process of change in both the economic and social structures of the South Indian Lake community. Though this list is by no means exhaustive, some of these factors include: the application of the Northern Affairs Act; the surrounding developments of Thompson and Leaf Rapids; the increasing accessibility through winter roads, an airstrip, scheduled air flights; the commercialization of the South Indian Lake Fishery; the leaving of the independent trader; the development of Cranberry Portage High School; the increased level of government programs and services, e.g. housing, welfare, etc.; and the Hydro development - its announcement, subsequent changes in the plan, the beginnings of construction in the area. It should be noted that many of these factors are not unique to South Indian Lake but rather are common to most northern communities which were previously isolated and are now in a process of transition.

In response to this process of change, the economic and social structures become more complex. People's functions become more specialized. They create institutions to perform specific tasks; they look to different individuals for leadership in different aspects of life - in effect leadership is dispersed among more people but for more specific purposes. All of these new institutions and leaders interact with each other to form a far more complex power base than before.

The community of South Indian Lake finds itself in the midst of this process of change. The traditional pattern still exists; extended families remain but their influence has been weakened by the increasing complexity of life. New institutions have been created in order to assist in carrying on the business and pleasure of day-to-day living. Many of these have replaced functions previously performed by the patriarchs or influential members of the extended family groups; others have been created for particular issues such as the Flood Committee which was formed to deal with Hydro, government and the lawyers in issues concerning the proposed Hydro development. The most significant institution to have been created is the Community Council. As the nature of dealings with the outside world has shifted in emphasis, the Mayor and Council have replaced the trader as the primary intermediary between the community and the world outside.

Because of the rapid changes taking place within the power structure, it is difficult to present a precise hierarchy of influence. However, there appears to be general agreement amongst our sources that the Mayor and Council are now, officially or formally, the pinnacle of power. There was less agreement as to where other people and institutions fit in the intermediate levels. The primary purpose in attempting to schematicize a power structure is to visually portray the vastly increased number of components which have appeared in recent years and not to imply that the second level is definitely more powerful than the third level. (One component, Manitoba Hydro, has been left out which, if not presently, may soon be an important part of the power structure by virtue of its incipient and potential influence.


Mayor & Council
Flood Committee
N.A.
I.A.
Former Trader
Traditionally Influential Patriarchs
Coop (Board of Directors)
C.O.'s
Nurses
The Bay
Patriarchs
Handicraft Club
Recreation Committee
School Committee
Church
Rank and File

Each of the components of the power structure provide some form of leadership. Generally speaking those higher in the power structure yield influence beyond the realm of the specific task which they represent whereas the leadership and influence of those in the lower echelons is more confined.

The purpose of portraying in some detail the changes which have been occurring in the power structure and therefore leadership patterns in South Indian Lake are twofold:

(1) It indicates the growing influence of individuals, agencies and government departments which are external to the community. Implicit in this observation is the increased need for people within the community to interact, negotiate and reach decisions with influences outside of the community. This is a "necessity of life" which was virtually unheard of a decade ago.

(2) It indicates the speed with which changes have been taking place within the last 7 or 8 years. The number of changes in leadership patterns and the associated changes in life style have been dramatic and intense, each bringing with them new procedures and new responsibilities to both the people in leadership positions and to the community in general. Before the people can accommodate and adjust to one change, another is in process, compounding the problems of adjustment to the first and creating the need for further adjustments to another.

The result of all these processes (the information they have been receiving, the feelings, beliefs and goals which they have developed concerning the hydro development, the increasing complexity of life and its inevitable effect on the leadership and power structures) has been to confound, frustrate and even mesmerize the community. As a result of the increased demands created by these changes in recent years the people have not had an opportunity to sit back and attempt to sort out its information, observe what has gone on, decide what further changes are likely to occur, determine what alternative courses of action are open to them - generally consolidate their position.

Recommendation:

That Government declare a moratorium on government initiated activities, that are liable to cause stress or have a negative impact at this time, for a period of three months more or less. This period would provide the community and its decision-makers with a breather during which time it could sort out the information it has, separate the relevant information from the irrelevant, distinguish "fact from fancy" and generally consolidate its position. The moratorium would be a period during which the community would not be expected to dissipate additional energy on new decisions other than those related to a development process and others which might be initiated by the Community Council.

DECISION MAKING

In the past in South Indian Lake, as in other similar communities, a position of leadership was achieved by reputation. People were not elected to formal positions and given specific guidelines, rules and parameters to exercise the authority of their position. As a result, the exercise of the power and privilege associated with leadership was less overt and usually subtle and indirect. This indirect leadership influence perpetuated the traditionally slow process of community decision making in which decisions were postponed or delayed until a consensus was reached.

Again traditionally most decisions made in the community concerned matters revolving around their domestic economic and social affairs - matters which were of concern to the community itself but not to outsiders - decisions which were made by the community or its leaders, for the community. Implicit in the "community consensus" decision making process were two important features:

i) consensus decision making was a very effective manner of preventing or managing conflict and turmoil in the community.

ii) the number of decisions required was few and the time available to make them was adequate. Because the community was in control of its own decision making and their time was their own, they could take all the time that was required.

However, as the community began to have greater contact with the outside - and, as pointed out, the proposed hydro development was only part of the cause - the decisions that were required were more complex. These decisions were largely implemented by outsiders and therefore decisions had to be made in collaboration with outsiders, e.g.'s townsite plan, housing allocation, airstrip site selection. The decision-making technology of the community has not kept pace with the decisions required to be made, therefore the gap, between the decision to be made and the community's technical ability to make them, broadens.

This results from several factors including:

i) administrators and community people operate in two different time frames. To an administrator, an issue may require a hurried decision either for reasons of office time pressure or because of the logistics of acting upon a decision once it is reached. Community people on the other hand may feel no such urgency because they do not see the issue as being that important or that urgent. The usual result of this kind of time conflict is that an administrator will tend to force or hurry a decision by the community which even when it is made, and has tacit approval of community decision-makers, may not necessarily carry with it a commitment to community action and follow through.

ii) the internal decisions which the community was accustomed to making revolved around matters with which they had had experience; matters which they knew and understood. The internal - external types of decisions often deal with issues or problems which are unique or are new to the community; they involve administrative procedures and considerations which the community has not dealt with.

iii) traditionally, because community decisions did not involve outsiders and because there was little urgency around most decisions, decision-making tended to be by consensus. If there were sectors of disagreement within the community, the decision would merely be delayed until such time as the conflict was resolved and consensus was achieved.

These conditions have given rise to an inadequate process for making decisions of the internal - external type. In the later 1960's in order to try to deal with this need the community organized itself politically and formed a community council. From its birth as an institution about 5 years ago, this civic body has effectively developed into the government of the community.

While the Mayor and Council have been elected by the community to deal with these internal - external types of issues and while the community has ascribed the usual authority to these positions, the Council still tends to try to reach decisions in the traditional, community consensus manner. This process is advantageous in some instances; in other instances, time does not allow consensus to take its course, and the process is inadequate.

There are at least two conditions which hinder the effectiveness of the Mayor and Council:

i) In a period of significant and rapid changes, such as that being experienced in South Indian Lake now and for the next few years to come, great pressures are placed on the available time of the leadership component. The Mayor and Council are put into the conflicting position of trying to carry out the responsibilities of their elected position at the same time as trying to live up to their family responsibility of earning a living. This situation reduces the time which can be set aside for Council business.

ii) Because the Mayor and Council is a relatively new institution, it has not had the time to establish patterns of action; the community council may not know how the people expect them to deal with matters; the people do not know how the council should deal with matters. This uncertainty is magnified by the fact that events and developments external to the community are creating change within the community.

People resist change for a number of reasons. Change often means moving from a situation which is comfortable and familiar to one which is basically unknown. Fear of the unknown is a powerful force militating against the pressure for change. For any individual, group or community to change, they must tend to move from one relatively stable state to another - invariably through a periodic process of uncertainty and unpredictability.

For the Mayor and Council, who are observing the uncertainty and stress of their community in transition, the fear of being seen to be agents of any form of change which will bring about more uncertainty and more stress can be so great that it results in immobility and no change.

Given this situation, it is difficult at this time for the community council to move away from consensus decision-making unless community discussions take place concerning the roles of the community and the roles of the Council in the process of decision-making.

Recommendation:

Given this situation and the previous recommendations in this section and the bases for them, there is an apparent need for the Community of South Indian Lake to learn new decision-making, problem-solving, communications and community-life skills. Therefore it is recommended that the

Department of Northern Affairs negotiate with the Manitoba Human Relations Centre with a view contracting with the Institute to initiate a development process in South Indian Lake as soon as possible.

(Appendix J includes an outline of various communication models including a Human Relations Centre, Community Education - Community life skills model).

Chapter VII

OTHER COMMUNITIES AFFECTED

OTHER COMMUNITIES AFFECTED

In addition to the social and economic impact on the community of South Indian Lake the diversion of the Churchill River and the regulation of Lake Winnipeg will affect people living in the communities of Nelson House, Cross Lake, Norway House, Ilford, Wabowden, York Landing, Split Lake, Gillam, Bird, Pikwitonei, and Churchill.

Between 36 and 41 fishermen will be affected by the Churchill River Diversion. The Nelson House fishermen will be affected by the diversion of the Churchill River into the Rat River and the subsequent flooding of Notigi, Rat, Wapisu and Wuskwatim Lakes. However, the fishermen have not fished these lakes in the past two years. The Ilford and York Landing fishermen will be affected by the reduced flow on the lower Churchill River and resultant unknown affects on Northern Indian, Fidler, and Billard Lakes. In addition, the Split Lake and some Ilford fishermen will be affected by the increased flow of water through Split Lake.

Approximately 72 fishermen from Norway House, Cross Lake and Wabowden will be affected by the control of Lake Winnipeg. These fishermen fish Playgreen, Cross, Kiskitto, Kiskittogisu, Pipestone and Drunken Lakes.

Approximately 75 trappers will be affected by the Churchill River Diversion. These trappers will be affected by increased water levels above the Notigi Control Structure, increased flows along the Burntwood River and reduced flows on the lower Churchill River. Between 150 and 200 trappers from Norway House and Cross Lake will be affected by the control of Lake Winnipeg. For further details please refer to Tables I and II.

TABLE I: Estimate of the Number of Individuals Affected by the Churchill River Diversion (excluding South Indian Lake).

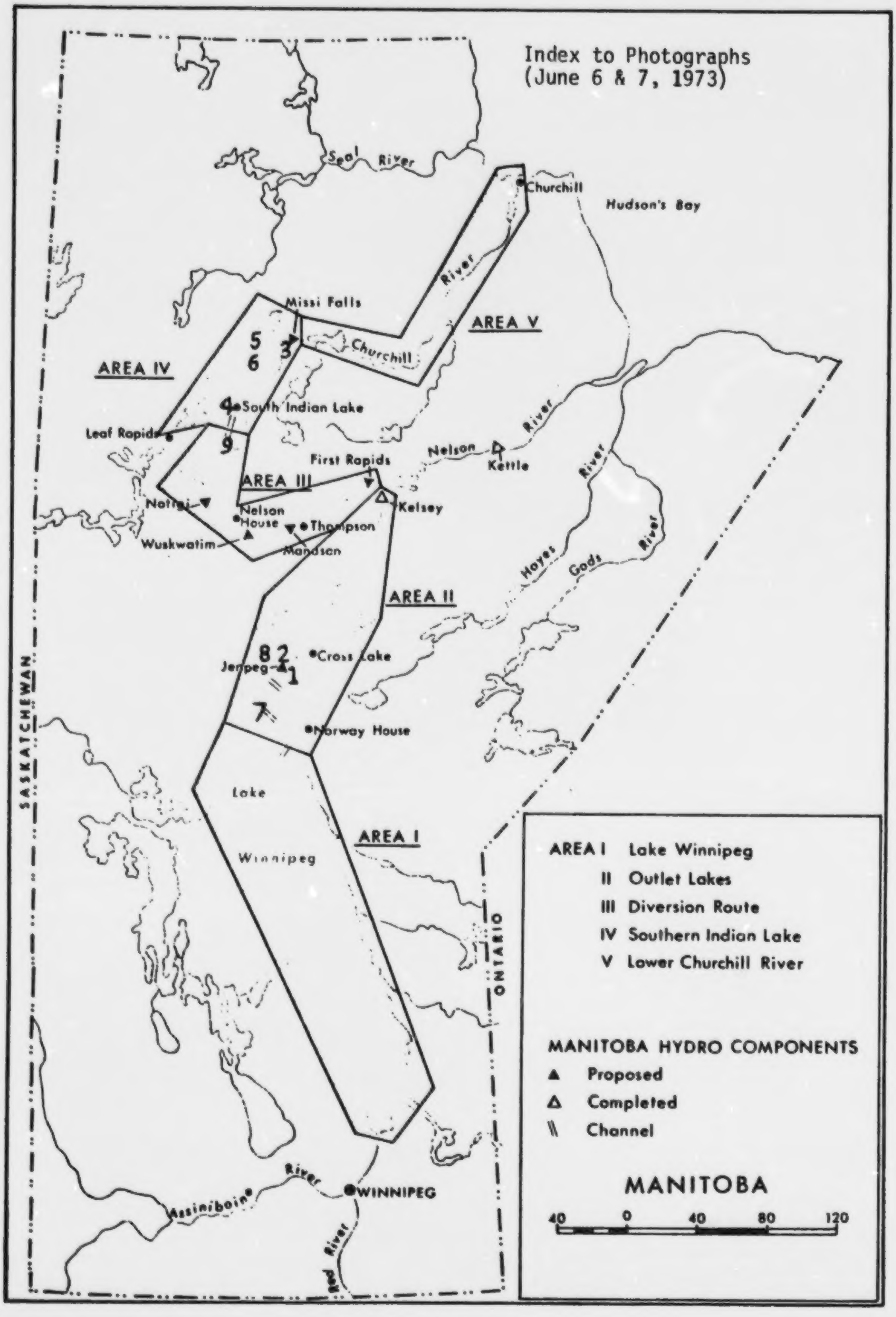
Community	Number of Fishermen	Number of Trappers
Nelson House	19	21
Ilford	10 - 15	1
Split Lake	6	21
York Landing	1	6
Gillam	-	6
Bird	-	4
Pikwitonei	-	7 - 10
Churchill	-	8
	36 - 41	74 - 77

TABLE II: Estimate of the Number of Individuals Affected by the Control of Lake Winnipeg at Jenpeg.

Community	Number of Fishermen	Number of Trappers
Norway House	50	50 - 100
Cross Lake	18	100
Wabowden	4 - 5	-
	72 - 73	150 - 200

In addition, landmarks, navigation routes and ice conditions will change along the diversion routes and in the Outlet Lakes area.

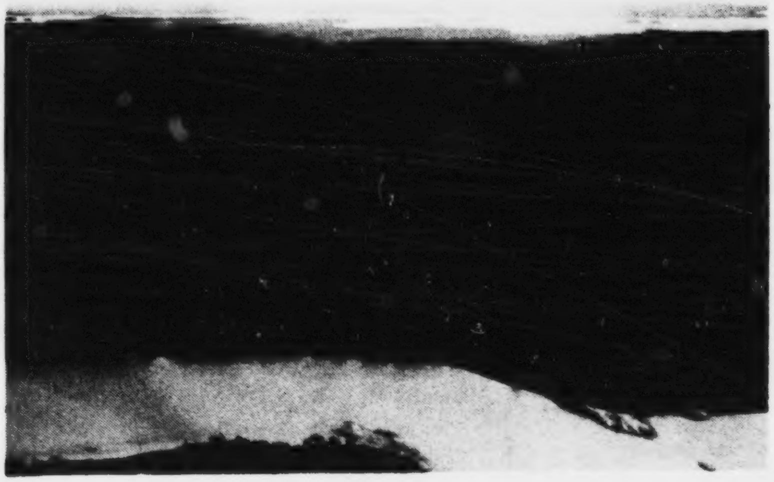
The degree of social and economic impacts of the Hydro development will vary directly with the amount of impingement that the development has upon these communities. It is recommended that an action-research program similar to that done as well as proposed for South Indian Lake be initiated immediately for the communities of Nelson House, Cross Lake and Norway House in order to determine preferred life-styles and to set up a communication information process. In addition it is recommended that the individuals affected in the remaining communities be contacted and informed of the proposed possible effects upon their fishing and their trapping activities. Assurance should be given to these individuals that they will be compensated for the loss in their fishing and trapping and that compensation may be in the form of improved fishing and trapping grounds if they so desire.



Index to Photographs
(June 6 & 7, 1973)

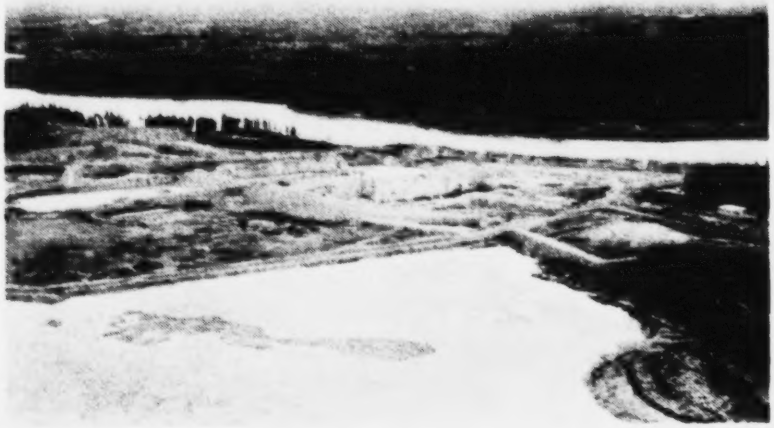
Seal River
Churchill
Hudson's Bay
River
Missi Falls
AREA V
Churchill
AREA IV
5
6
3
4
South Indian Lake
Leaf Rapids
9
First Rapids
Nelson
Kettle
River
AREA III
Notigi
Nelson House
Thompson
Kelsey
Wuskwatim
Manasan
River
Hayes
Gods
River
AREA II
8 2
Cross Lake
Jenpeg
1
7
Norway House
Lake
Winnipeg
AREA I
SASKATCHEWAN
ONTARIO
Assiniboine River
WINNIPEG
Red River
AREA I Lake Winnipeg
II Outlet Lakes
III Diversion Route
IV Southern Indian Lake
V Lower Churchill River
MANITOBA HYDRO COMPONENTS
▲ Proposed
△ Completed
\\ Channel
MANITOBA
40
0
40
80
120

Northern Manpower Corps. camp south of Jenpeg



Some of the area cleared along the
West Branch of the Nelson River south of Jenpeg

Jenpeg site — Lake Winnipeg Regulation control structure activity on the West Branch of the Nelson River where it enters Cross Lake



Jenpeg -- Temporary townsite (construction camp) and control structure area

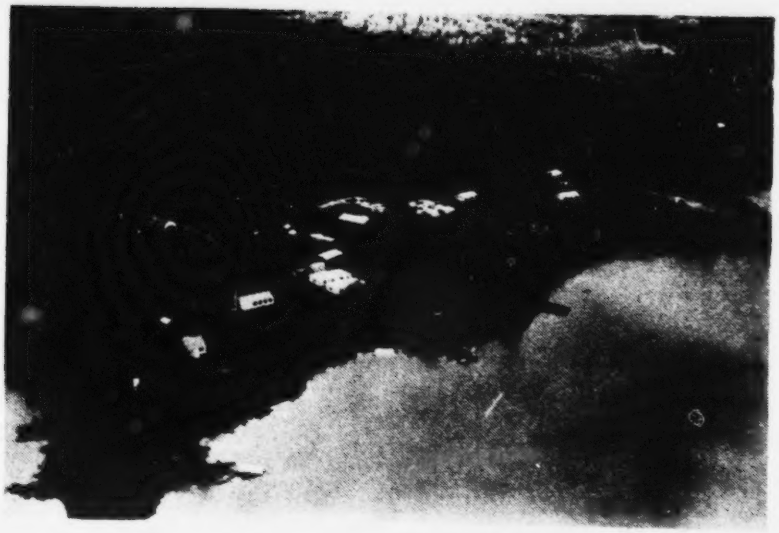
Airstrip near Missi Falls

Southern Indian Lake - Missi Falls vicinity

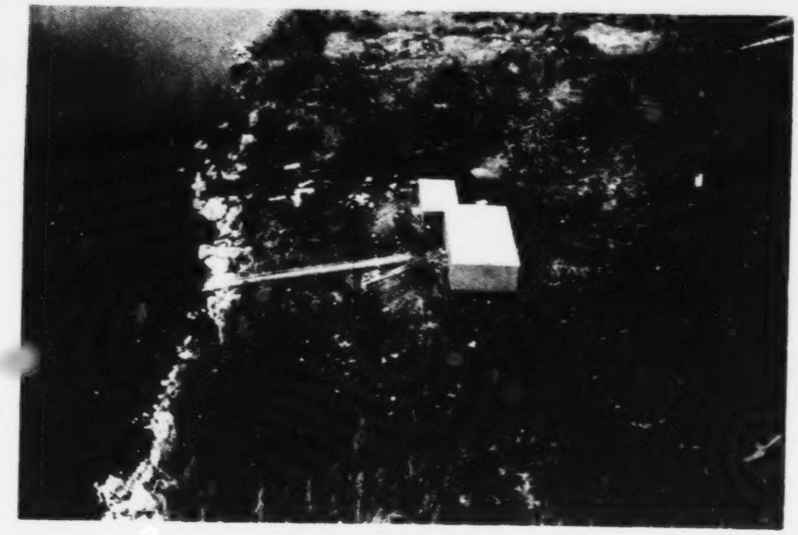
Missi Falls - Southern Indian Lake

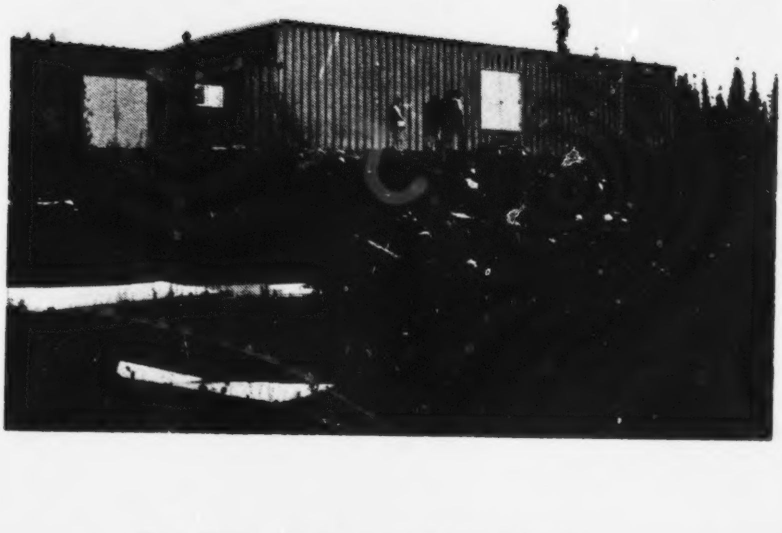
Construction Camp on South Channel near Missi Falls

Parts of South Indian Lake Settlement

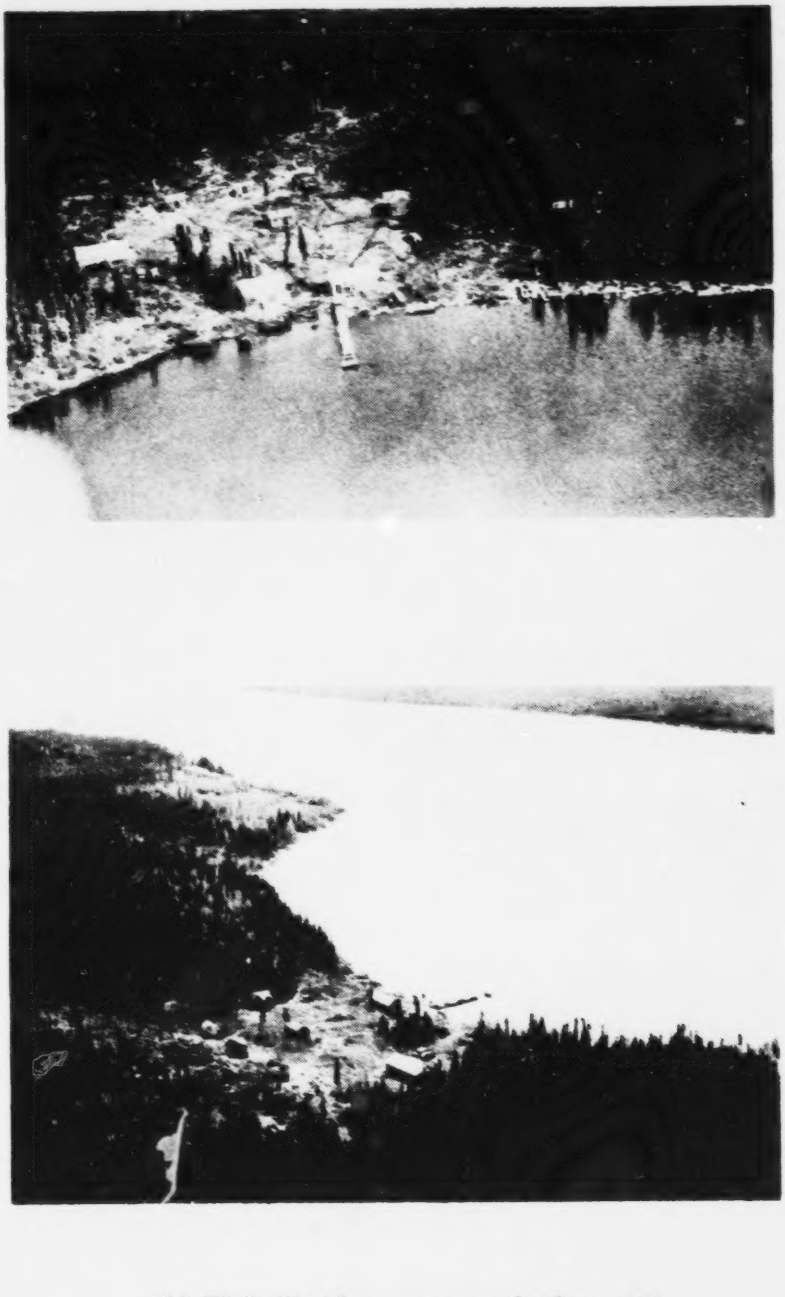


Parts of South Indian Lake Settlement





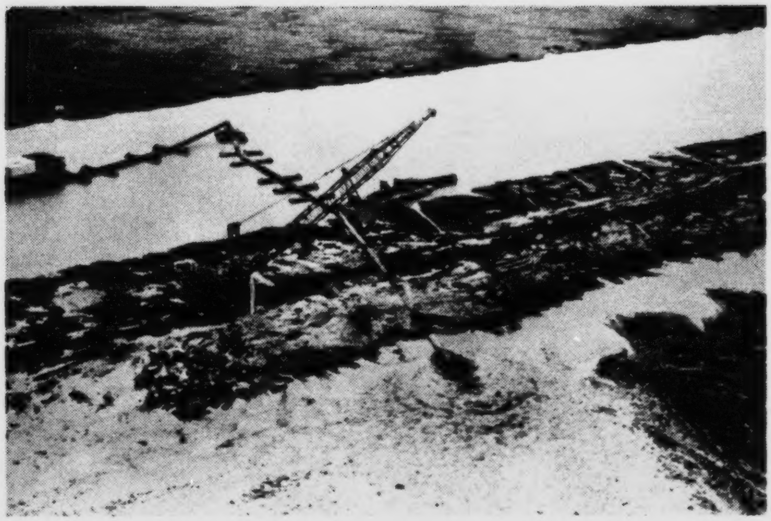
New Fish Station at Loon Narrows --
considerable cleanup and dock construction still required

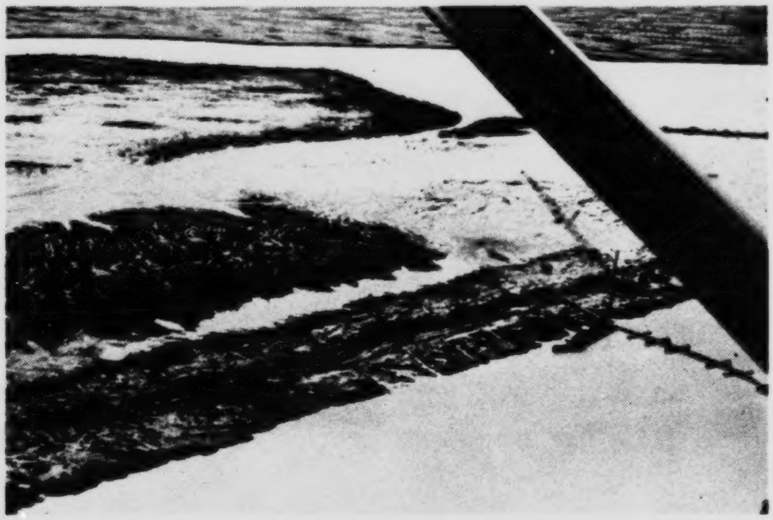


Old Fish Station, accommodation, etc.,
at Loon Narrows — new station in background of lower picture

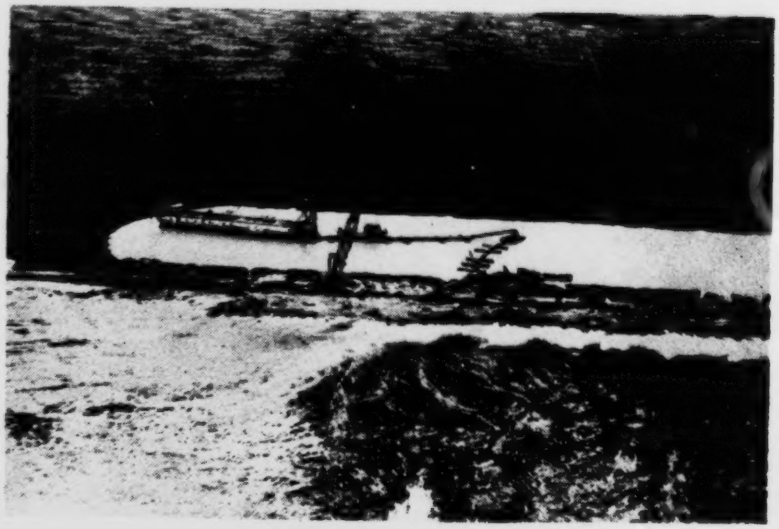
Loon Narrows Fish Station -- extent of conveyor presently required to move fish and ice to and from the dock (yet to be built) and plant

Small creek at base of Long Point on
Southern Indian Lake -- if trees cleared, freight boats travelling
from Loon Narrows to the plant at Leaf Rapids could save about 35
miles once the level of the lake is raised

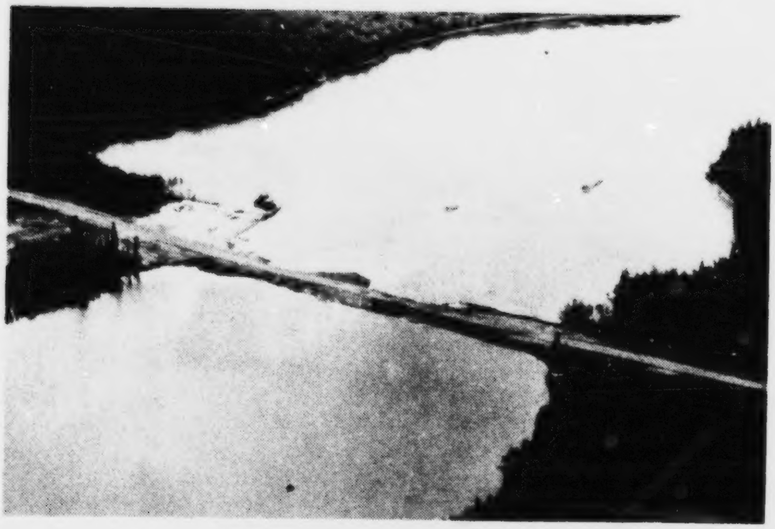


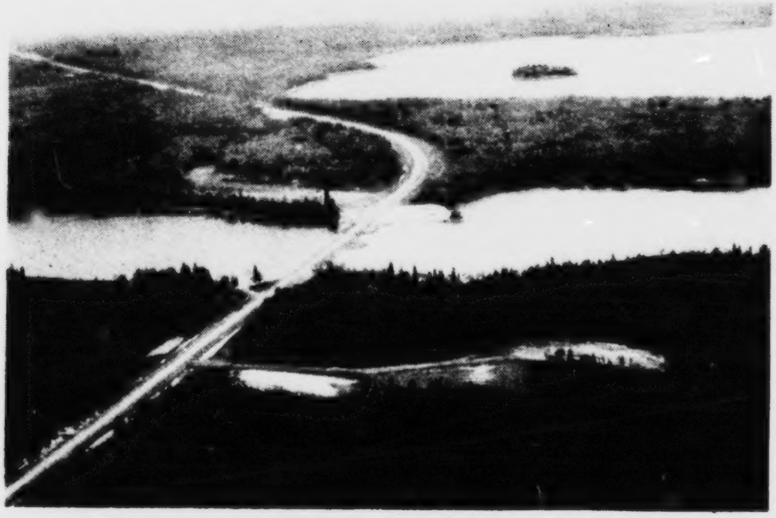


Dredging operation -- 8 Mile Channel
between Playgreen and Kiskitogisu Lakes -- note clay deposits

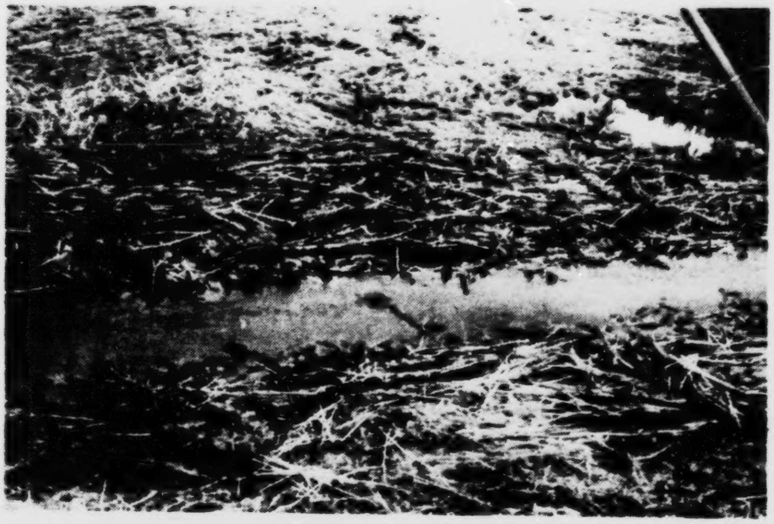


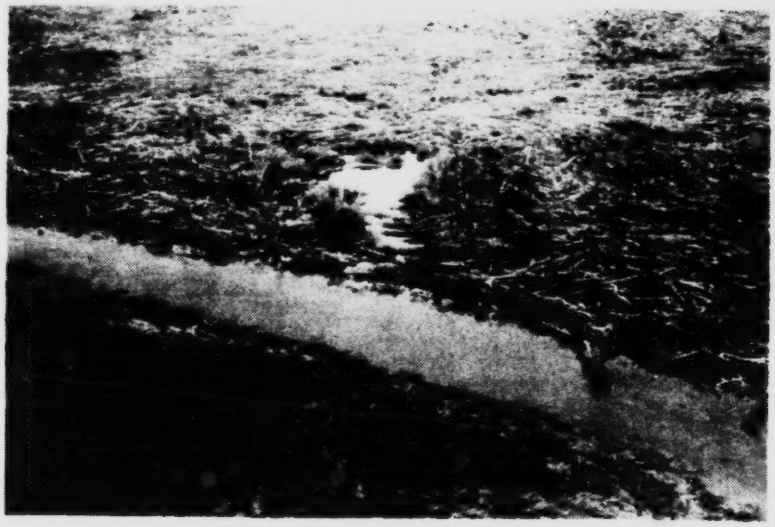
Dredging operation -- 8 Mile Channel
between Playgreen Lake and Kiskitogisu





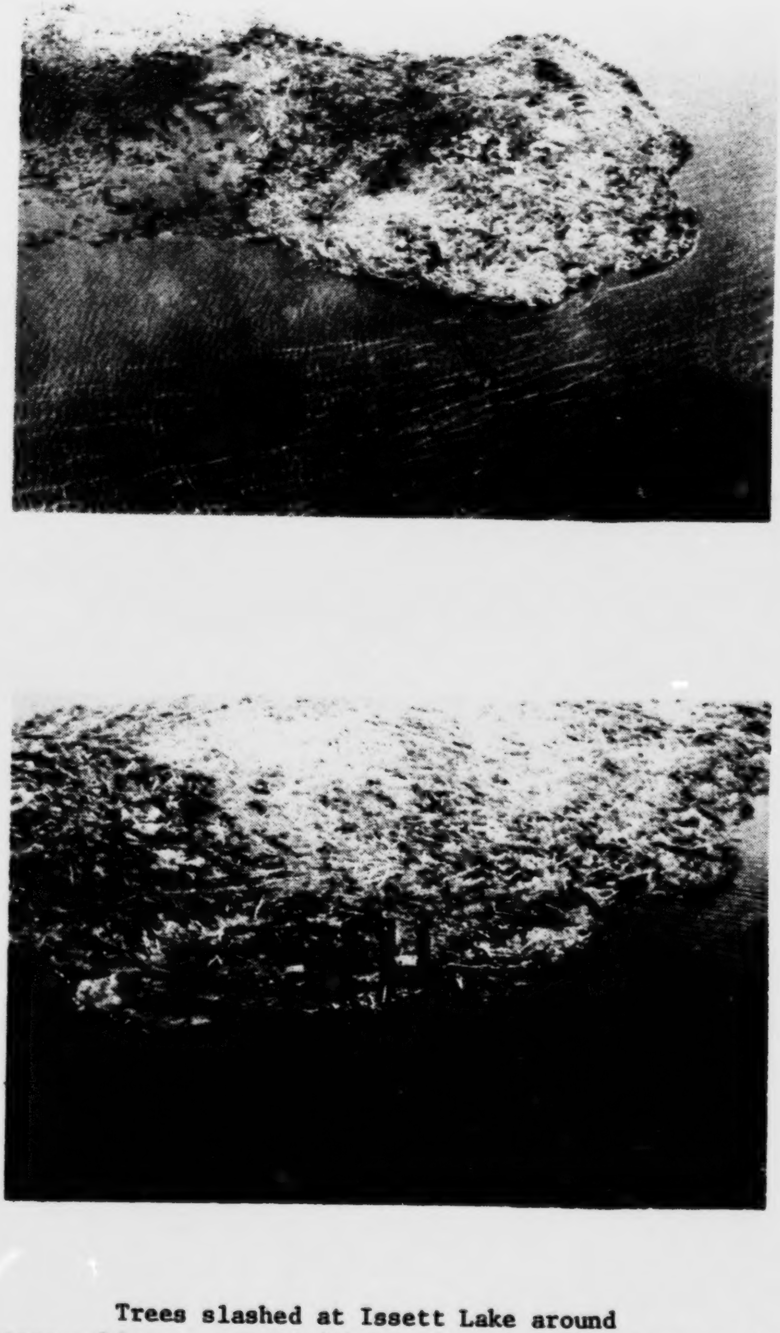
Causeway with culverts across the mouth of the Minago River (to be replaced with a bridge) has cut off boat traffic between Cross Lake and the Minago River and Drunken Lake



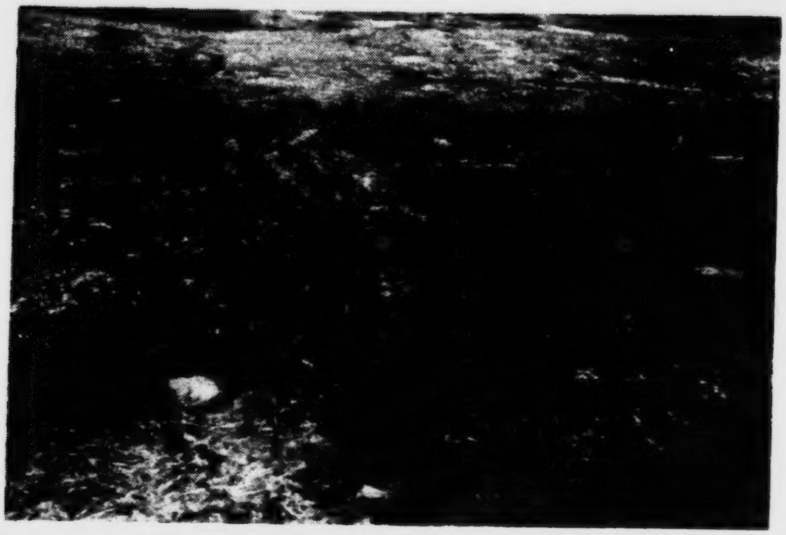


Trees slashed (knocked down only) along
Rat River south of Issett Lake -- some damage
to traplines and transportation of trappers
severely hampered

Trees slashed (knocked down only) along Rat River south of Issett Lake -- some damage to traplines and transportation of trappers severely hampered



Trees slashed at Issett Lake around
trappers cabins -- reported loss of some traps, sleds and fuel



Site of channel -- South Bay to Issett Lake

APPENDIX A

PROJECTED POPULATION OF NORTHERN MANITOBA COMMUNITIES --

AN INDIRECT APPROACH

Projected population is one important component of the set of information required for purposes of regional and community planning. It provides the basis for formulation of programs to provide community services and infrastructure, including basic education, manpower training, job opportunities, health services and recreation facilities. This analysis provides a methodology for indirect population projections of northern communities in instances where refined estimates are not required or cannot be developed in the time available.

Procedure:

The future population of a community or region is a function of: (1) its present population, (2) fertility, (3) survival, and (4) migration. In order to develop "direct" population projections it is necessary that each of the factors identified be estimated for the years for which future population is to be estimated and applied to the population for which future population information is required. However, instances where: (1) population projections are available for a larger region and population group of which a community being studied is a part, and (2) it is acceptable to assume that the age-sex distribution, fertility, survival and migration characteristics of a particular segment of that population are the same as or similar to those of the larger population group (the community segment for which future population estimates are required is an average community) indirect estimates can be made. Such an indirect procedure has been employed here. It is discussed below.

The projected 1975, 1980 and 1990 Manitoba populations of native northerners as available from previous work[1] are presented in

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[1] Unpublished population analyses conducted by Dr. C. F. Framingham, Associate Professor, Department of Agricultural Economics, University of Manitoba.

Table 1. Table 2 contains the fertility and survival rates on which Table 1 population projections are based. Migration rates are assumed equal to zero for the projection presented.

Given the population projections presented in Table 1, estimates of 1975, 1980 and 1990 projected male and female population per 1,000 were developed as follows:

Step 1--Calculate projection year population as a percent of 1971 population.

Step 2--Calculate projection year population in each age group as a percent of projection year population.

Step 3--Calculate projection year age group population as follows: projection year age group population per 1,000 = 1,000 (percent projection year population is at 1971 population) X (percent projection year age group population is of projection year total population).

For example, if 1975 female population is 120 percent of 1971 female population and 1975 projected female population is in the 0-5 year age group is 5 percent of 1975 female population then the 1975 0-5 year age group female population per 1,000 is equal to 1,000 (1.20) (0.5) = 1,000 (.055) = 60 individuals.

Table 1

Estimated 1971 Native Northerner Population and Corresponding 1975, 1980 and 1990 Projected Population[a]

				Projected Population								
	1971			1975			1980			1990		
Age Group	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
0– 5	3,025	2,868	5,893	2,797	2,679	5,476	3,515	3,357	6,872	5,517	5,269	10,786
5–10	2,707	2,619	5,326	3,120	2,924	6,044	2,771	2,657	5,428	4,405	4,214	8,619
10–15	2,170	2,119	4,289	2,588	2,579	5,167	[illegible]	2,920	6,032	3,475	3,326	6,801
15–20	1,536	1,603	3,139	2,026	1,971	3,997	[illegible]	2,574	5,153	2,754	2,649	5,403
20–25	1,244	1,184	2,428	1,436	1,491	2,927	[illegible]	1,966	3,977	3,079	2,908	5,987
25–30	970	793	1,763	1,205	1,086	2,291	[illegible]	1,487	2,911	2,538	2,558	5,096
30–35	782	663	1,445	916	781	1,697	[illegible]	1,083	2,279	1,979	1,953	3,932
35–40	640	565	1,205	743	651	1,394	[illegible]	778	1,684	1,398	1,474	2,872
40–45	545	450	995	609	502	1,111	731	647	1,378	1,165	1,069	2,234
45–50	451	360	881	509	437	946	596	497	1,093	875	761	1,636
50–55	372	303	675	420	343	763	494	430	924	695	628	1,323
55–60	305	289	594	341	283	624	401	333	734	551	476	1,027
60–65	318	244	562	291	273	564	316	269	585	436	402	838
65–70	244	178	422	277	217	494	258	257	515	327	300	627
70–75	192	133	325	203	167	370	229	196	425	231	227	458
75–80	100	86	186	135	105	240	150	141	291	157	193	350
80–150	97	99	196	100	102	202	127	124	251	170	193	363
Total	15,698	14,556	30,254	17,716	16,591	34,307	20,816	19,716	40,532	29,752	28,600	58,352

[a] The fertility and survival rates on which the projections are based are contained in Tables 2 and 3, respectively. Migration rate is assumed to be zero for all age groups.

Table 2

Estimated Historic and Future Fertility Rates for Native Northerners

Age Group	1970 and Projection Period Fertility Rates per 1,000 Females 1970	1975	1980
15 - 19	136.6	129.0	125.0
20 - 24	280.3	264.3	255.6
25 - 29	268.7	252.7	244.0
30 - 34	274.9	259.0	250.4
35 - 39	160.9	149.6	143.5
40 - 44	93.5	86.6	82.6
45 - 49	8.8	8.3	7.8

Table 3

Survival Rates for Native Northerners

Age	Survival Rate[a] Male	Female
0	0.9755599	0.9810582
1	0.9977463	0.9981906
2	0.9988762	0.9987644
3	0.9995111	0.9993283
4	0.9994838	0.9993289
5	0.9994861	0.9994342
6	0.9995096	0.9995835
7	0.9995460	0.9997161
8	0.9995872	0.9997714
9	0.9995995	0.9997957
10	0.9995836	0.9997954
11	0.9995610	0.9997851
12	0.9994815	0.9997334
13	0.9993884	0.9997071
14	0.9992625	0.9996683
15	0.9991175	0.9996228
16	0.9989675	0.9995767
17	0.9988261	0.9995360
18	0.9986780	0.9995005
19	0.9985140	0.9994661
20	0.9983572	0.9994331
21	0.9982308	0.9994020
22	0.9981581	0.9993730
23	0.9981642	0.9993465
24	0.9982335	0.9993221
25	0.9983285	0.9992995

Table 3 (continued)

Age	Survival Rate[a]	
	Male	Female
26	0.9984116	0.9992782
27	0.9984452	0.9992579
28	0.9984222	0.9992470
29	0.9983678	0.9992457
30	0.9982925	0.9992414
31	0.9982066	0.9992214
32	0.9981207	0.9991728
33	0.9980416	0.9990866
34	0.9979624	0.9989713
35	0.9978727	0.9988405
36	0.9977621	0.9987077
37	0.9976204	0.9985865
38	0.9974406	0.9984849
39	0.9972297	0.9983939
40	0.9969979	0.9983014
41	0.9967554	0.9981953
42	0.9965126	0.9980638
43	0.9963016	0.9979134
44	0.9961155	0.9977524
45	0.9959062	0.9975704
46	0.9956252	0.9973573
47	0.9952245	0.9971029
48	0.9946838	0.9968027
49	0.9940352	0.9964636
50	0.9933091	0.9960922
51	0.9925358	0.9956952
52	0.9917454	0.9952792
53	0.9909799	0.9948437

Table 3 (continued)

	Survival Rate[a]	
Age	Male	Female
54	0.9902191	0.9943842
55	0.9894001	0.9939016
56	0.9884604	0.9933968
57	0.9873371	0.9928709
58	0.9860202	0.9923871
59	0.9845515	0.9919449
60	0.9829461	0.9914492
61	0.9812193	0.9908048
62	0.9793861	0.9899166
63	0.9774994	0.9887491
64	0.9755492	0.9873657
65	0.9734561	0.9858197
66	0.9711409	0.9841643
67	0.9685245	0.9824526
68	0.9656378	0.9808364
69	0.9625337	0.9792803
70	0.9591656	0.9775567
71	0.9554870	0.9754377
72	0.9514514	0.9726959
73	0.9471156	0.9693604
74	0.9425106	0.9655831
75	0.9375512	0.9613199
76	0.9321522	0.9565273
77	0.9262283	0.9511612
78	0.9198364	0.9452510
79	0.9130333	0.9388258
80+	0.8581900	0.8784230

[a] Survival rates are assumed to remain constant at present levels as estimated by Statistics Canada.

Result

The projected population per thousand and 1971 population are presented in Table 4.

From the data presented in Table 4 the future population of a particular community can be approximated for any or all of the 1975, 1980 and 1990 projection years on the basis of its 1971 population. To make such an approximation it is necessary only to divide that community's population by 1,000 and multiply the result by the appropriate column of Table 4. Illustrative results are presented in Appendix Tables 5-9 for the northern Manitoba communities at Split Lake, Nelson House, South Indian Lake, Cross Lake and Norway House using 1971 estimates of population available from Manitoba North.[2]

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[2] D.J. Sandell and C.F. Framingham, Manitoba North, prepared and distributed by the Secretariat Planning and Priorities Committee of Cabinet, Province of Manitoba (Winnipeg: Queen's Printer, August, 1972).

Table 4

Projected Male, Female and Total
1975, 1980 and 1990 Population
per 1,000 Population in 1971

	....	..........Population per 1,000 Total Population.	....									
		1971			1975			1980			1990	
Age Group	Male	Female	Total[a]	Male	Female	Total[a]	Male	Female	Total[a]	Male	Female	Total[a]
0- 5	101	96	197	92	89	181	116	111	227	182	175	357
5-10	89	87	176	103	97	200	91	88	179	145	140	285
10-15	71	70	141	85	86	171	102	97	199	114	110	225
15-20	50	53	103	67	65	132	85	85	170	91	88	179
20-25	41	40	81	47	49	97	66	65	131	101	96	198
25-30	33	27	60	40	36	76	47	49	96	84	85	168
30-35	26	22	48	30	26	56	39	36	75	65	65	130
35-40	21	19	40	24	22	46	30	26	56	46	49	95
40-45	18	14	32	20	17	37	24	21	46	38	35	74
45-50	15	12	27	17	15	31	20	16	36	29	25	54
50-55	12	10	22	14	11	25	16	14	31	23	21	44
55-60	10	9	19	11	9	21	13	11	24	18	16	34
60-65	10	8	18	10	9	19	10	9	19	14	13	28
65-70	8	6	14	9	7	16	8	9	17	11	10	21
70-75	6	4	10	7	6	12	8	7	14	8	8	15
75-80	3	3	6	4	3	8	5	5	10	5	6	12
80-150	3	3	6	3	3	7	4	4	8	6	6	12
Total[a]	517	483	1,000	583	551	1,134	686	654	1,340	980	949	1,929

[a] Totals may not add up exactly due to rounding.

APPENDIX

Table 5

Projected Population of Split Lake As Derived from Total Projected Population of Manitoba's Native Northerners

Age		1975			1980			1990	
Group	Male	Female	Total[a]	Male	Female	Total[a]	Male	Female	Total[a]
0- 5	75	70	145	94	87	181	148	137	285
5-10	83	76	160	74	69	143	118	110	228
10-15	69	67	136	83	76	159	93	87	180
15-20	54	51	106	69	67	136	74	69	143
20-25	38	39	77	54	51	105	82	76	158
25-30	32	28	60	38	39	77	68	67	135
30-35	25	20	45	32	28	60	53	51	104
35-40	20	17	37	24	20	44	37	38	76
40-45	16	13	29	20	17	36	31	28	59
45-50	14	11	25	16	13	29	23	20	43
50-55	11	9	20	13	11	24	19	16	35
55-60	9	7	16	11	9	19	15	12	27
60-65	8	7	15	8	7	15	12	10	22
65-70	7	6	13	7	7	14	9	8	17
70-75	5	4	10	6	5	11	6	6	12
75-80	4	3	7	4	4	8	4	5	9
80-150	3	3	6	3	3	7	5	5	10
Total[a]	474	432	906	557	513	1,070	796	745	1,541

[a] Totals may not add up exactly due to rounding.

Table 6

Projected Population of Nelson House As Derived from Total Projected Population of Manitoba's Native Northerners

Age		1975			1980			1990	
Group	Male	Female	Total[a]	Male	Female	Total[a]	Male	Female	Total[a]
0- 5	135	138	272	169	173	342	265	271	536
5-10	150	150	301	133	137	270	212	217	429
10-15	124	133	257	150	150	300	167	171	338
15-20	97	101	199	124	132	256	132	136	269
20-25	69	77	146	97	101	198	148	150	298
25-30	58	56	114	68	77	145	122	132	254
30-35	44	40	84	58	56	113	95	100	196
35-40	36	33	69	44	40	84	67	76	143
40-45	29	26	55	35	33	68	56	55	111
45-50	24	22	47	29	26	54	42	39	81
50-55	20	18	38	24	22	46	23	32	66
55-60	16	15	31	19	17	36	27	24	51
60-65	14	14	28	15	14	29	21	21	42
65-70	13	11	24	12	13	26	16	15	31
70-75	10	9	18	11	10	21	11	12	23
75-80	6	5	12	7	7	14	6	10	17
80-150	5	5	10	6	6	12	8	10	18
Total[a]	852	854	1,706	1,001	1,015	2,016	1,431	1,472	2,903

[a] Totals may not add up exactly due to rounding.

Table 7

Projected Population of Cross Lake
As Derived from Total Projected
Population of Manitoba's
Native Northerners

		1975			1980			1990	
Age Group	Male	Female	Total[a]	Male	Female	Total[a]	Male	Female	Total[a]
0- 5	179	168	347	224	211	435	352	331	683
5-10	199	184	383	177	167	344	281	265	546
10-15	165	162	327	199	184	382	222	209	431
15-20	129	124	253	165	162	326	176	167	342
20-25	92	94	185	128	124	252	197	183	379
25-30	77	68	145	91	93	184	162	161	323
30-35	58	49	108	76	68	144	126	123	249
35-40	47	41	88	58	49	107	89	93	182
40-45	39	32	70	47	41	87	74	67	142
45-50	32	27	60	38	31	69	58	46	104
50-55	27	22	48	32	27	[illegible]	[illegible]	[illegible]	[illegible]
55-60	22	18	40	26	21	47	35	30	65
60-65	19	17	36	20	17	37	28	25	53
65-70	18	14	31	16	16	33	21	19	40
70-75	13	10	23	15	12	27	15	14	29
75-80	9	7	15	10	9	18	10	12	22
80-150	6	6	13	8	8	16	11	12	23
Total[a]	1,131	1,043	2,174	1,329	1,239	2,568	1,899	1,798	3,697

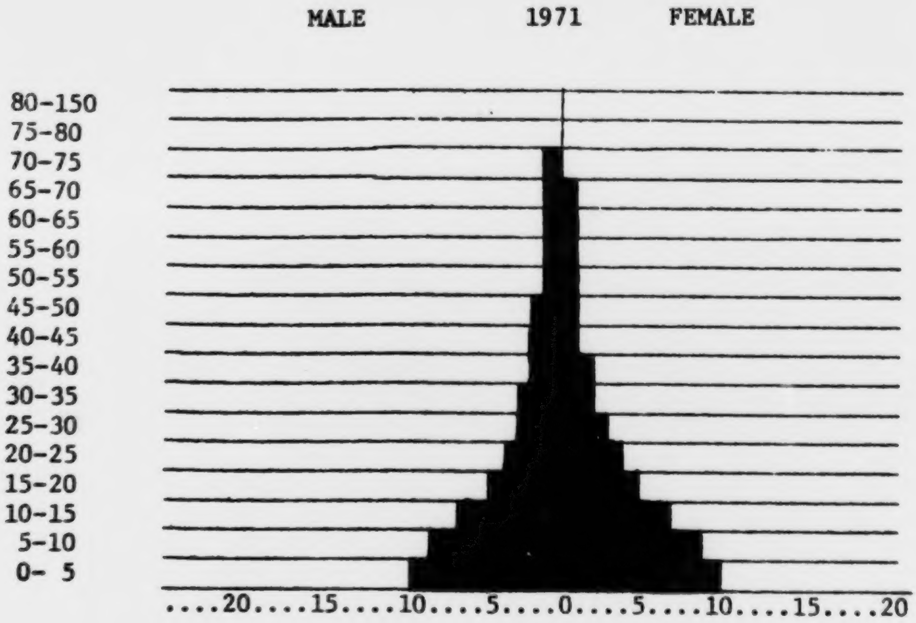
[a] Totals may not add up exactly due to rounding.

Table 8

Projected Population of Norway House
As Derived from Total Projection
Population of Manitoba's
Native Northerners

	1975			1980			1990		
Age Group	Male	Female	Total[a]	Male	Female	Total[a]	Male	Female	Total[a]
0- 5	249	251	500	313	314	628	492	493	985
5-10	278	274	552	247	249	496	393	394	787
10-15	231	241	472	278	273	551	310	311	621
15-20	181	184	365	230	241	471	246	248	493
20-25	128	140	268	179	184	363	275	272	547
25-30	107	102	209	127	139	266	226	239	466
30-35	82	73	155	107	101	208	177	183	359
35-40	66	61	127	81	73	154	125	138	263
40-45	54	47	101	65	61	126	104	100	204
45-50	45	41	86	53	47	100	78	71	149
50-55	37	32	70	44	40	84	62	59	121
55-60	30	26	57	36	31	67	49	45	94
60-65	26	26	51	28	25	53	39	38	76
65-70	25	20	45	23	24	47	29	28	57
70-75	18	16	34	20	18	39	21	21	42
75-80	12	10	22	13	13	27	14	18	32
80-150	9	10	18	11	12	23	15	18	33
Total[a]	1,580	1,552	3,132	1,856	1,845	3,701	2,653	2,676	5,330

[a] Totals may not add up exactly due to rounding.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1971
FEMALE
80-150
75-80
70-75
65-70
60-65
55-60
50-55
45-50
40-45
35-40
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25-30
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10-15
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0- 5
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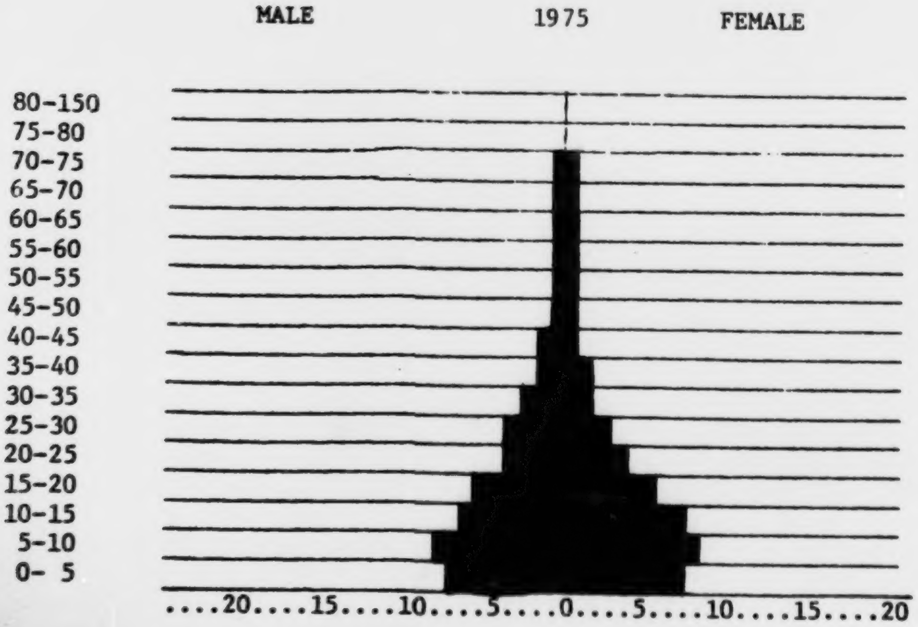
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1975
FEMALE
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60-65
55-60
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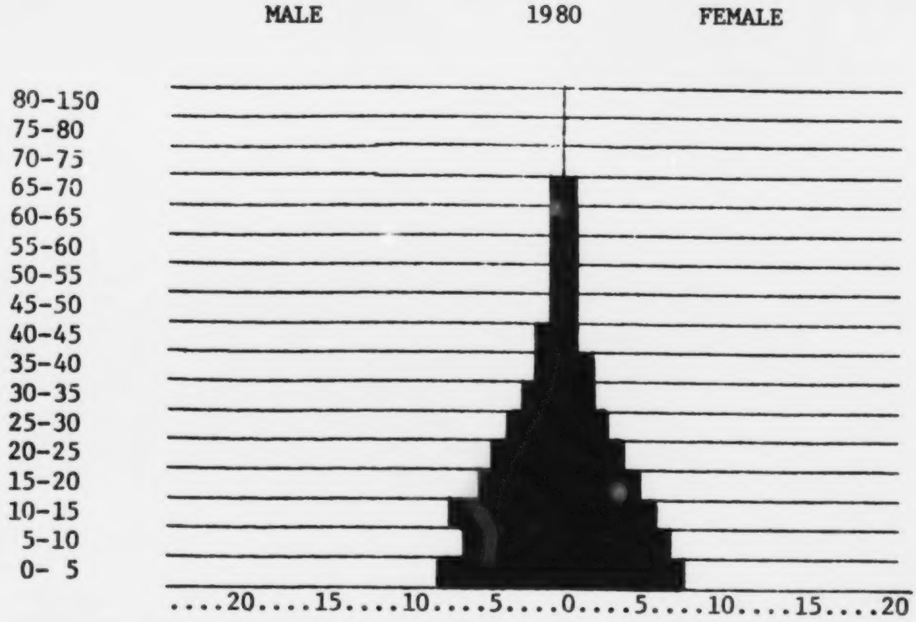
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1980
FEMALE
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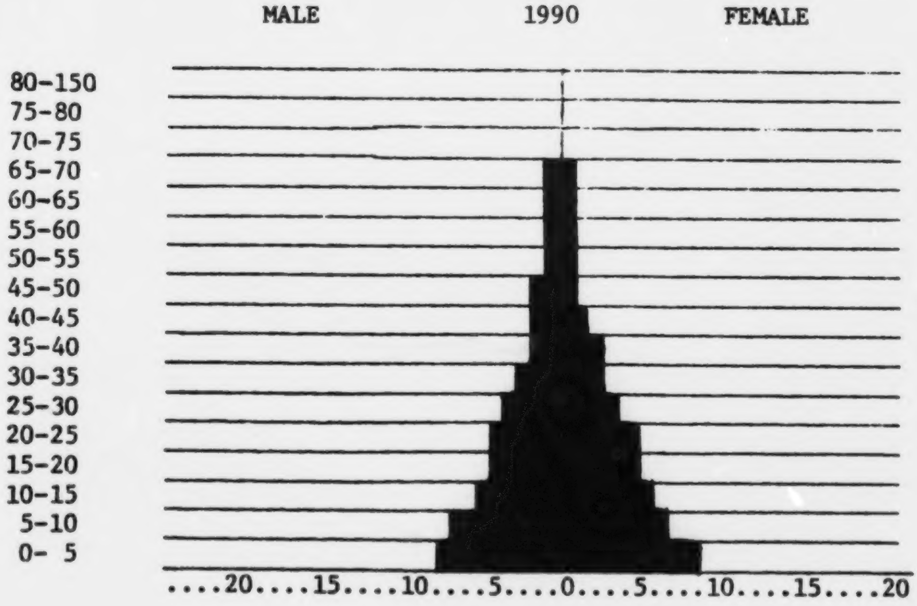
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1990
FEMALE
80-150
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30-35
25-30
20-25
15-20
10-15
5-10
0- 5
....20....15....10....5....0....5....10....15....20

Projected Population of South Indian Lake As Derived from Total Projected Population of Manitoba's Native Northerners

Age Group	1971			1975			1980			1990		
	Male	Female	Total[a]	Male	Female	Total[a]	Male	Female	Total[a]	Male	Female	Total[a]
0–5	59	57	116	53	53	106	68	65	133	107	103	210
5–10	53	51	104	61	57	118	54	52	106	85	83	168
10–15	42	41	83	50	51	101	60	57	117	67	65	132
15–20	30	31	61	39	38	77	50	50	100	54	52	106
20–25	24	24	48	28	29	57	39	38	77	59	57	116
25–30	19	16	35	21	24	45	28	29	57	49	50	99
30–35	15	13	28	18	15	33	23	21	44	38	38	76
35–40	12	11	23	14	13	27	18	15	33	27	29	56
40–45	11	8	19	12	10	22	14	12	26	22	21	43
45–50	9	7	16	10	9	19	12	9	21	17	15	32
50–55	7	6	13	8	6	14	9	8	17	13	12	25
55–60	6	5	11	7	5	12	8	6	14	11	9	20
60–65	6	5	11	6	5	11	6	5	11	8	8	16
65–70	5	3	8	5	4	9	5	5	10	6	6	12
70–75	4	2	6	4	4	8	5	4	9	5	5	10
75–80	2	2	4	2	2	4	3	3	6	3	4	7
80–150	2	2	4	2	2	4	2	2	4	3	3	6
Total	306	284	590	343	324	669	404	381	785	574	560	1,134

SOUTH INDIAN LAKE

Population Projections Based on Average for Northern Native People

	Age Group	1971			1975			1980			1990		
		Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Pre School	0-5	59	57	116	53	53	106	68	65	133	107	103	210
School	5-15	95	92	187	111	108	219	114	109	223	152	148	300
School or Undecided	15-20	30	31	61	39	38	77	50	50	100	54	52	106
Potential Mobile Labor Force	20-40	70	64	134	81	81	162	108	103	211	173	154	147 347
Potential Traditional Labor Force &Life Style	40-65	39	31	70	43	35	78	49	40	89	71	65	136
Pensioners with less flexible life style	65+	13	9	22	13	12	25	15	14	29	17	18	35
TOTAL		306	284	590	343	324	669	404	381	785	574	560	1,134

APPENDIX B

SOUTHERN INDIAN LAKE - COMMERCIAL FISHERY

Commercial fishing began on Southern Indian Lake in 1942 with the first fresh fish being taken out by air in 1943. Trapping was the sole source of cash income prior to that.

Employment in the fishery over the years has gradually shifted from fish companies and outside fishermen hiring local residents to fish for them to a completely local operation by 1970 which represented the single most important economic activity for the community. At present, the commercial fishery represents about $200,000 net income or 40% of the total community income. This total includes income-in-kind (food, clothing, fuel) from resources as well as all government transfer payments.

Over the past year, however, the fisheries co-operative has fallen into financial difficulties directly linked to the new facilities at Leaf Rapids, Loon Narrows station and the purchase of freight boats. The debt load is approximately $1 million and the chances of the Co-op being able to pay off any of this appear remote. In fact, the operating expenses of the Co-op might only be met by reducing the returns to the individual fishermen. This could well result in a gross return to fishermen below their operating costs.

With this immediate problem overshadowing the fishery, it is virtually impossible to assess the impact of the Hydro development. Biological data should be available through the Study Board this coming fall but without an overall "model" of the fishery this information will be of limited value -- especially to the local fishermen.

Therefore, even regardless of the diversion, a "simulation model" of the entire fishery from lake to market (Winnipeg) is essential if decisions which must be made can be made with some knowledge and understanding of the effects on the entire fishery. Such a model would show, for example, the effect on the net income of fishermen of a reduction in price in order to meet the operating expenses of the Co-op. It could be used to simulate the effects of adding lakes not presently fished; of various alternative transportation systems; of various processing possibilities; of biological changes in the lake, etc.

Therefore, it is recommended that arrangements be made immediately to construct such a model and collect the necessary data to make it functional.

Parallel to this, it is recommended that an advisory committee be established to work with those developing the model so that all the various "actors" in the fishery become aware of the model and its usefulness, and aware of each others roles and potential contributions.

In addition to being useful in the case of Southern Indian Lake, the model proposed, once developed, could be applied to other fisheries such as Ilford, Island Lake, etc., simply by plugging in the relevant data.

OUTLINE FOR ANALYSIS -- COMMERCIAL FISHERY

Background and Study Context - Dimensions of Study

Purpose of the Analysis--Objectives--Framework Analysis of Industry Dimensions to Determine Impact of Alternative Treatment of Dimensions

The Planning Framework -

- role of advisory committee

The Proposed Approach--1. Processing and Handling Cooperatives

2. Transportation

3. The Primary Producer Fishing Enterprise

4. Biological Production Potential

   Annual Harvesting

   Periodic Harvesting

5. Specification of Quotas

6. Market Analysis by Species

7. Interrelationship to Rest of Community Economic Base

8. Model Synthesized the Above Dimensions for Analysis

Data Sources

AN OUTLINE FOR THE ANALYSIS OF FISH PRODUCTION AND PRODUCER FISH PROCESSING AND DELIVERY

Background and Study Context

Fishing is a significant source of income and employment for a large number of Manitobans, including native northerners and processors in Winnipeg. The industry has characteristically been one where returns to fishermen are low. The reasons for the low level of returns (income) can be enumerated:

1. Lakes for commercial fishing are spread over a large geographic area and transportation problems exist in both the assembly of fish at fishing stations and in shipping for processing in Winnipeg.

2. The handling and processing of fish is loosely structured and problems of facility utilization and management levels are present. More stringent but necessary health standards require greater capital investment in facilities.

3. Fisheries management methods, if improved, would increase production levels and reduce unit costs substantially. A multiplicity of agencies relate to various components of the overall fishery but no apparent focal point appears to exist either at the federal or provincial level.

4. Lake quotas vary and are specified on an annual basis. This reduces incentive to fishermen to purchase major assets. Thus, further analysis of factors affecting biological production is needed to increase the stability and predictability of quotas and thereby the fishing industry.

5. Knowledge of market potential and actions to affect it are limited and as a consequence, future expansion of the industry and distribution of processing activity is uncertain.

6. Specification of the relative income and employment potential of fishing (compared to forestry, trapping, manufacturing, recreation and welfare) as a component of the economic base of a community or region is required to permit an effective allocation of limited public resource development expenditures.

Purpose of the Study

The purpose of the study is to:

1. Develop a planning framework within which fishermen, co-ops and government objectives related to the fishing industry can be identified and implications of alternative resource development strategies analyzed.

2. Develop an approach appropriate for the analysis of the income and job potential of the fishing industry with special emphasis on: (a) fish handling and processing by fishermen and cooperatives, (b) transportation, (c) the future production-income and employment relationships for fishermen, (d) the biological production potential of Northern Manitoba lakes, (e) market potential, (f) quotas, and (g) the potential of fishing relative to other

job and income opportunities including forestry, trapping, manufacturing, recreation and welfare present in the economic base of northern communities.

3. To apply the approach to analysis of that portion of the Northern Manitoba fishing industry presently and potentially associated with the Leaf Rapids Fisheries Cooperative.

The Planning Framework

Individual fishermen, producer groups (cooperatives) and governments are concerned with and involved in the fishing industry because of their interest in achieving certain objectives. The Manitoba government reflecting the wishes of Manitoban's is concerned about the employment of and northern residents and the conservation of natural resources. Fishermen are concerned with improving their income and level of living. Reaching such goals depends on several interrelated components best considered within an overview of the fishing industry. (Figure I).

The framework outlined in Figure I consists of five interacting components:

1. Resource Base (natural, social and human capital or resource stocks),
2. Resource use by sector (fishing, mining, forestry, energy, furs, and recreation),

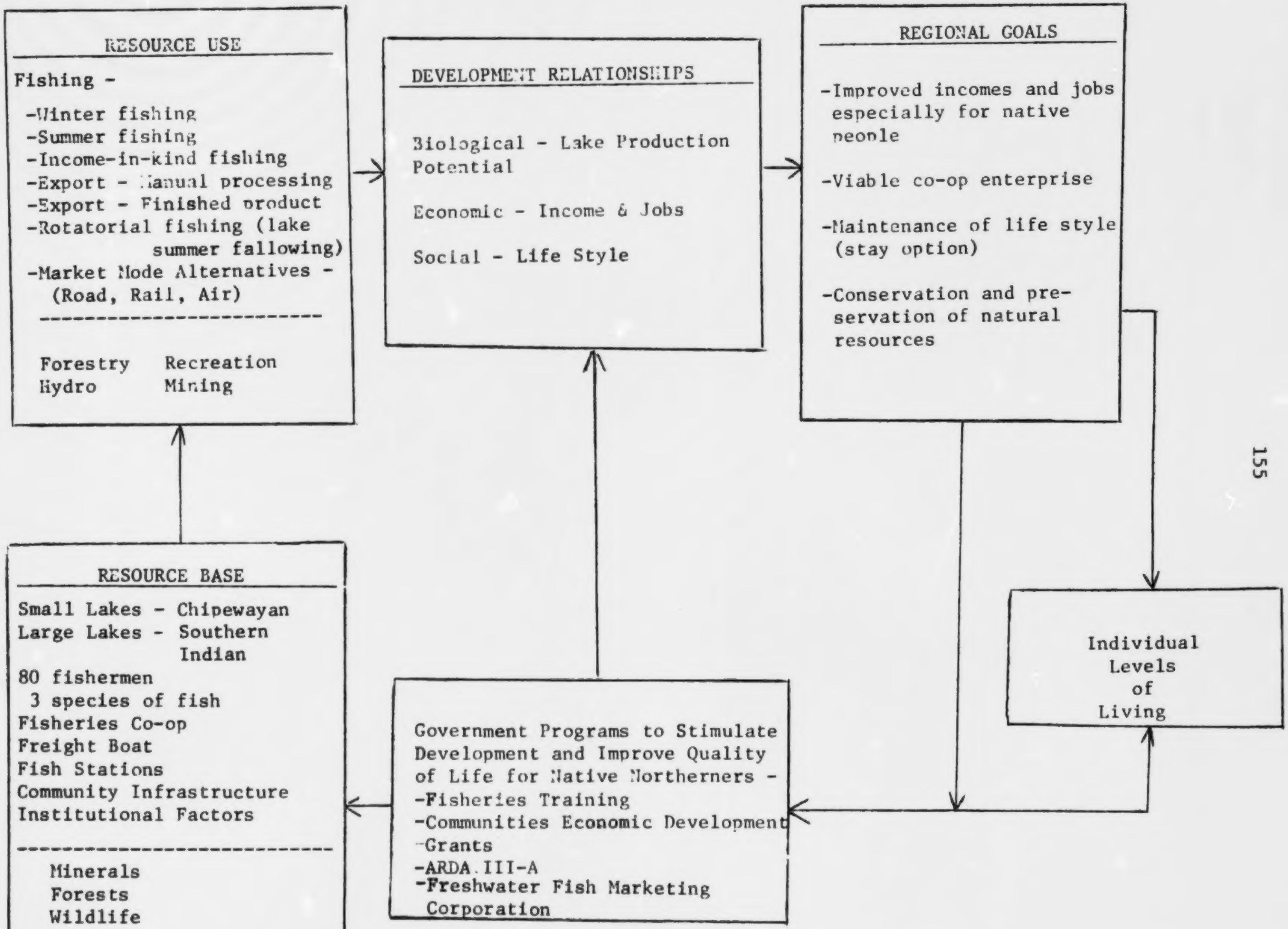
RESOURCE USE
Fishing -
-Winter fishing
-Summer fishing
-Income-in-kind fishing
-Export - Manual processing
-Export - Finished product
-Rotatorial fishing (lake summer fallowing)
-Market Mode Alternatives - (Road, Rail, Air)
Forestry
Recreation
Hydro
Mining
DEVELOPMENT RELATIONSHIPS
Biological - Lake Production Potential
Economic - Income & Jobs
Social - Life Style
REGIONAL GOALS
-Improved incomes and jobs especially for native people
-Viable co-op enterprise
-Maintenance of life style (stay option)
-Conservation and preservation of natural resources
RESOURCE BASE
Small Lakes - Chipewayan
Large Lakes - Southern Indian
80 fishermen
3 species of fish
Fisheries Co-op
Freight Boat
Fish Stations
Community Infrastructure
Institutional Factors
Minerals
Forests
Wildlife
Government Programs to Stimulate Development and Improve Quality of Life for Native Northerners -
-Fisheries Training
-Communities Economic Development
-Grants
-ARDA III-A
-Freshwater Fish Marketing Corporation
Individual Levels of Living

FIGURE I - A Planning Overview of the Northern Manitoba Fishery Industry

3. Development Relationships (Biological, Social and Economic),

4. Regional Goals (income and jobs, viable co-ops, stay option, conservation, preservation and improved level of living).

5. Government Policy and Programs (quotas of living), licencing, investment subsidies, hatcheries, fisheries management extension, merchandising, resource regulations).

Within the framework the Resource Base, put to a particular combination of resource uses in the context of specific development relations results in certain levels of goal achievement. Government programs serve to stimulate, modify and/or restrain the influence of certain elements of one or several components. Their purpose is to increase the level of achievement of selected goals.

Within the framework the central issue is that of identifying the goals on which policymakers may place specific weights reflecting those issues that are important. (The process is that of selecting those goals which are to be emphasized in program development and expenditure). Once goals have been specified the task is to relate the Resource Base and existing and potential Resource Uses to those goals through the identification of regional development relations. When the components and their interrelationships have been specified it becomes possible to determine the impact of programs on goals which policymakers have selected as important.

The contents of each of the five components merit further emphasis. Since the fishing industry is central to this analysis it is emphasized in the discussion.

Figure II contains a listing of possible goals policymakers may choose for emphasis and present weighting of the objectives. The weighting is simply an illustrative example.

POSSIBLE REGIONAL GOALS	ILLUSTRATIVE WEIGHT*
Improved Income for Fishermen	10
Functional Fisheries Cooperatives	10
Fishermen Participation in Decision-Making	10
Maintenance of Community Life Styles - Stay Option	10
Fishing Industry Job Creation and Stability	8
Northern Industrialization and Development	6
Protection of the Environment	7
Production Efficiency in Fishing	4
Complementary of Resource Use in Providing Jobs and Income from Fishing, Recreation, Mining, Energy, Production and Forestry	6

FIGURE II - Possible Regional Goals Weighted for Purpose of Illustration

*Weighting is on a 1 - 10 scale with 10 indicating goals of top priority.

Given the identification of a set of goals the elements of each of the other components as outlined in Figure I are analyzed. At the conclusion of the proposed study it will be possible to indicate the impact of proposed policy and program alternatives on 1) jobs and incomes in the fishing industry, 2) community life styles and viability of fisheries co-operatives. The analytical model will be capable of showing the impact of alternatives regarding quotas, fish prices, transportation of fish, primary production and fish handling and processing.

The following section discusses in detail each of the several components of an analytical model necessary to provide for such analyses. It also contains a summarized statement of the model to be synthesized from those components. The components are 1) fish handling and processing, 2) the primary fish producing enterprise, 3) transportation, 4) biological production, 5) fishing quotas, 6) market analysis and 7) the relationship of fishing to resource use alternatives.

PRIMARY PRODUCER

From a fisheries management point of view it is necessary to establish the objective of management, i.e., is the objective to maximize average annual earnings, including income-in-kind, per fisherman or to maximize the number of fishermen allowed to utilize the resource subject to the constraint that they all derive a "reasonable" income from the resource. In lieu of the fact that most of the northern fishermen are of native ancestry possessing low levels of education and employment skills and that the availability of "real" alternative employment is limited, one might be inclined to choose the latter alternative.

From the point of view of the primary producer his objective is to obtain his quota at the least possible cost thus yielding the highest margin of profit, i.e., his objective function is that of income maximization. Relevant costs to the fisherman broadly include:

1. Costs of capital used in the fishing operation
2. Labor costs - the value of his own time plus that of any hired help
3. Transportation costs - the costs incurred in getting the fish to the processing plant or export agency

On the larger northern lakes (eg. South Indian Lake) the following alternative types of operations will be considered.

A. SUMMER SEASON

1. One man skiff operation
2. Two man skiff operation
3. Whitefish boat operation

B. WINTER SEASON

1. One man skidoo operation
2. Bombardier operation - two man
   - three man

At the level of the primary producer an attempt will be made to determine, on a per season basis, which type of operation provides the highest net economic return for the fisherman. An attempt will also be made to integrate other management objectives into the schemata for management purposes. This will involve a detailed examination of the relevant alternative costs and revenues associated with the different modes of operation. Some of the relevant cost and revenue components are discussed on the following pages.

Relevant revenues or returns include the value of the fish harvested which consists of pickerel, whitefish, pike and lake trout (not found in all northern lakes eg. Southern Indian Lake). At present the harvest of rough fish (suckers, etc.) is not economically viable to any significant extent. An important question is "at what price does locally processed mullet become economic"?

Since most lakes have a minimum of two seasons (summer and winter) in which the type and magnitude of costs incurred vary significantly, the cost components of each season will be discussed separately.

A. SUMMER SEASON

(1) Capital Costs: Under the capital component of the cost structure the following variables are relevant:

- boat costs
- motor and associated costs
- cost of nets
- costs of transporting fish to the processing plant

The boat costs incurred in the operation largely depend on the type of boat being used, i.e., a whitefish boat (inboard motor) or a skiff (yawl) with an outboard motor. In remote northern areas of Manitoba whitefish boats must, at present, be brought in from the southern part of the province. Information must be obtained regarding costs of transporting the boats to the various lakes. The use of a whitefish boat also entails the hiring of additional manpower. Yawls or skiffs are probably more efficient for use on the northern lakes since the initial costs incurred in procuring a skiff and outboard motor are significantly less than that of a whitefish boat ($700 vs. $10,000). Another relevant consideration is that the skiffs or yawls are more convenient for personal transportation between settlements and require less costly repairs.

It would be very difficult, if not impossible, to accurately assess the cost of nets on a per season basis since the same nets can be used for different seasons. The other costs associated with nets are the costs of corks, leads, etc., and the cost of the labor involved in repairing them. Given that the number of various employment alternatives is restricted, the opportunity cost of this labor is very low. Information on licencing, quotas, and legal net yardage is also required because on some lakes the licence holders are authorized to fish additional yardage for each hired man employed under his licence. The higher returns associated with the use of more yardage* could possibly outweigh the increased costs associated with hiring more men. This margin could provide a sufficient incentive to hire extra help. Information on the regulations regarding permissible mesh size is also required. Usually a range of permissible mesh size (say, mesh size is to be not less than 4¼ inches and not greater than 5¼ inches) is authorized by the fishery managers. The relationship between mesh size, biological sustained yield and income to fishermen is important.

Costs of transporting the fish from the fishing grounds to the processing plant are also very relevant to the analysis. For some of the more remote lakes air transportation is the only means available but the feasibility of bombardier and other means of transportation, such as tractor hauling operations, would also have to be considered. These will be discussed in a later section of the paper.

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*Under present yardage restriction quotas are not being met and potential for increased yardage per man will be investigated.

B. WINTER SEASON

The characteristic difference between the winter season and the summer season is that the bombardier and skidoo replace the boat as a means of transportation to and from the fishing grounds. Thus information of the differential costs incurred in using a skidoo or bombardier must be acquired. These would include initial purchase costs, depreciation, repair and maintenance costs, and operating costs.

If different nets are used then an attempt must be made to assess the costs of the nets used.

In the winter fishery (as well as the summer) a certain portion of the costs incurred for transportation can be attributed to personal use. Similarly, a certain portion of the fish produced would be used for personal consumption and these factors affecting real cost and income factors for the fishermen will be considered.

PROCESSING AND HANDLING

After the fish have been taken from the water the next problem encountered is that of processing and handling the harvest, i.e., what method or mix of methods is optimal in preparing the fish for export to the retail markets. A particular processing plant could potentially perform one or all of the following functions: dressing the fish, filleting, freezing and storage, packaging, conversion of fish into convenience foods, canning and marketing. The question then becomes one of minimizing the costs incurred for each of these processes and consequently information on the additional costs incurred would be required. In Manitoba there are several processing plants and the question becomes one of determining the optimal mix of functions to be performed by each plant and optimum number and distribution of plants. Cost minimization would be used as the objective function subject to plant capacity constraints, constraints relating to the cost of transporting the fish from one plant to another, and equity considerations such as area employment objectives.

With regard to the Leaf Rapids plant any analysis would require the determination of various cost alternatives such as:

1) lakeside handling only (no Leaf Rapids involvement) and direct shipment of the fish production to the plant in Winnipeg,
2) Handling only (at Leaf Rapids),
3) Handling and processing (filleting, canning, etc.),
4) Entire processing at Leaf Rapids and direct export to the retail markets.

If we assume specific quotas for a lake or set of lakes* we can, regardless of the type (s) of function performed by the processing plant ask the following questions and seek types of information required to analyze the effect of increasing the quotas:

1. What additional costs would be incurred by the processing plant with regard to capital expansion, i.e., is the plant presently utilized to full capacity or is it underutilized?

2. What additional labor costs would be incurred and is the labor available, skilled or unskilled?

3. What additional transportation costs would be incurred in transporting the fish to another plant for further processing or to the export market.

4. Does the average cost per pound incurred by the plant depend solely on the volume of fish processed or is their some type of interaction between volume per se, and the volume of certain types of species; economies of scale in processing.

5. Does the increased quota have an effect on the cost per pound of harvesting the fish for the fishermen, i.e. are there economies of scale in the harvest of fish?

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*Given allocation of certain lakes to recreational use.

6. Can the present market situation handle the greater volume of fish without requiring a price decrease and what would be the magnitude of this decrease, i.e., is the market demand elastic or inelastic?

The question relating to the optimal mix of functions to be performed by each of the processing plants requires detailed information on such factors as:

(1) the additional costs incurred in adding another function to an existing plant relative to performing that function in another plant. This would require detailed information on the alternative cost structures of the various plants, transportation cost information, information on the employment generating (or reducing) effects, availability of suitably skilled manpower, inter regional wage structures, area income effects, costs incurred in creating the additional plant capacity.

(2) information on possible alternative uses for already constructed facilities. If a particular plant is continually operating at a net loss then it is possible that an analysis would indicate that the plant should be completely shut down and allow a more efficient plant to handle their entire production. If such was the case in a northern region then the facilities might be used for other purposes (eg. recreation). This would have less detrimental effects on the employment and income situation of the area

CULLAGE

In a recent study on Lake Winnipeg* headed by Dr. Ray England an attempt was made to estimate the value of production lost due to cullage of spoiled fish resulting from the irregularity of net lifting. By estimating the production that would have occurred if the fishermen had lifted their nets every day and comparing that figure to the actual poundage landed it was found that the cullage in the 1969 summer whitefish-pickerel fishery caught off Grand Rapids was about 42% of the landed production. That is, about 30% of the production from this area may have been culled due to spoilage.

In the northern lakes the problem of cullage due to spoiled fish is more dependent on the time required to get the fish from the lakes to the processing plant. The lack of facilities to keep the fish on ice for that period represents the heart of the problem. This situation could possibly be alleviated by fishing the remote smaller lakes only during the winter since there would be ice available directly from the lakes. Another possibility is to set up ice houses at certain vantage points on these lakes. However, such a scheme, in operation on Lake Winnipeg, has not proved very successful. These and other factors affecting cullage will be evaluated.

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*F.R.E.D. Fisheries Adjustment Study; Manitoba Dept. of Mines, Res. and Environ. Mgmt.

ROUGH FISH:

At present the potential market for rough fish (suckers, etc.) depends on the acceptance of new products at a price that makes the operation viable. Information regarding the minimum feasible price to make rough fish harvesting profitable in order to determine the economic feasibility of transporting rough fish from the northern lakes to Winnipeg is required. An initial step would be to determine the margin of profit earned on rough fish for the Lake Winnipeg area. If it is very marginal then the probability of developing economic uses for rough fish from the northern lakes is probably quite low.

In addition, likely distributions of new markets for rough fish through product development and market expansion could be included in the analysis.

TRANSPORTATION:

Transportation modes and linkages which provide for the prompt delivery of fish to processing plants and fresh fish markets are critical. Delayed pickups lead to high cull rates and decreased returns.

Fish from Northern Manitoba Lakes may be transported to handling and processing location and markets by one or several of four modes for each of the summer and winter seasons. Those modes are freight boat[1], air, truck and rail. In the proposed analysis of South Indian Lake and associated remote lakes utilization of each feasible single transport mode and combination of modes will be analyzed. The schematic diagram presented in Figures III and IV indicate the feasible summer and winter transport modes identified for consideration.

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[1] Bombardier and tractor train for winter haulage

Aircraft of more than one kind may be used and fly with less than full loads. Implications of alternate types of aircraft and varying load factors will be considered. Inclusion of the factors mentioned above and implications of pickup delays will be considered.

COLLECTION POINT AND ENTRY MODE

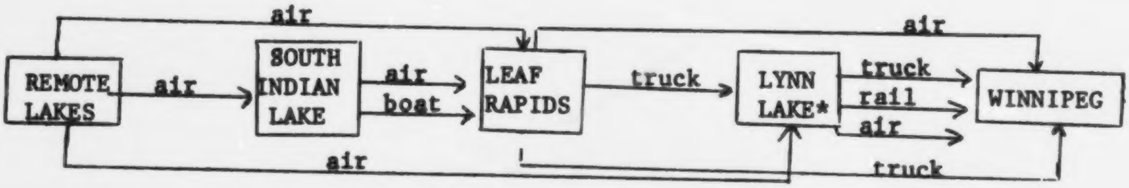
air
air
REMOTE LAKES
air
SOUTH INDIAN LAKE
air
boat
LEAF RAPIDS
truck
LYNN LAKE*
truck
rail
air
WINNIPEG
air
truck

FIGURE III - Feasible Remote and South Indian Lake Summer Transportation Modes Identified for Inclusion in the Analysis

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*Substitution of Thompson for Lynn Lake as a collection point or the addition of Thompson as an alternate collection point will be considered.

COLLECTION POINT AND ENTRY MODE

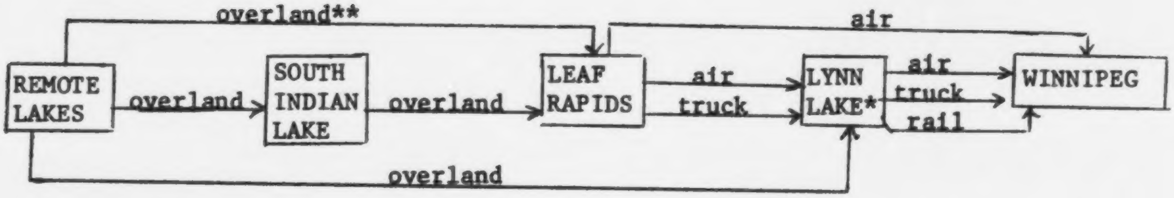
overland**
air
REMOTE LAKES
overland
SOUTH INDIAN LAKE
overland
LEAF RAPIDS
air
truck
LYNN LAKE*
air
truck
rail
WINNIPEG
overland

FIGURE IV - Feasible Remote and South Indian Lake Winter Transportation Modes Identified for Inclusion in the Analysis

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*Substitution of Thompson for Lynn Lake as a collection point or the addition of Thompson as an alternate collection point will be considered

**Bombardier or tractor train

BIOLOGICAL PRODUCTION:

The productive capacity of lakes is dependent on a number of factors including water levels, water temperature, presence of good spawning grounds, availability of food, etc. Fisheries biologists have devoted considerable effort to the determination of the effect of these and other influential factors on the biological productivity of lakes. As indicated earlier, the stabilization of factors affecting productive capacity in order to stabilize quotas and hence fish production. In the proposed study productive capacity and potential changes in it as estimated by provincial and federal fisheries biologists will be employed.

Quotas - In this study quotas serve as principal constraints in fish production by lake and for the industry. Quota levels specified in the analysis and used to estimate the impact of quota adjustment will be based directly on information secured from estimates of fish production potential referred to in the preceding section.

Market Analysis - The long term viability and stability of the fishing industry is contingent on the existence of market demand. Several alternatives are available for the treatment of this study dimension. These include:

1) Assuming that market demand for fish will remain stable at current levels in the future.

2) Estimating future market demand through the construction of market demand functions estimated in terms of the major determinants of

fish demand - income, population, pricing of fish and fish substitutes. While such demand analysis will not be emphasized in the proposed study some consideration will be given to levels and determinants of future demand.

RELATIONSHIP OF FISHING TO RESOURCE USE ALTERNATIVES

The well being of a community or region is determined by its economic resource base and the effectiveness with which it is used to achieve specified objectives. In Northern Manitoba fishing is one way in which the resource base may be used. Others include forestry, recreation, energy production, mining. To analyze the fishing industry without considering resource use alternatives is to ignore several basic issues. The following questions reflect those issues:

1) If the members of the community labor force employed in the fishing industry did not fish would other employment opportunity be available and if available would they generate high or low income relative to fishing.

2) Is the community economic base such that future employment opportunities will exceed the labor force available or will unemployment exist even given full utilization of the economic base. In other words, is there a balance between available labor and available jobs or does one exceed the other.

In the proposed analysis employment opportunities available from all dimensions of the economic base will be analyzed to the extent necessary to determine the presence or absence of competition between labor for fishing and labor for alternate employment creating economic activity. Absence of employment alternatives would indicate that reduction in jobs and income in fishing would increase welfare expenditures. Ideally, the analysis would show the impact on jobs and income of alternative levels of public resources development by sector.

SYNTHESIS OF COMPONENTS OF THE FISHING INDUSTRY INTO A MODEL SUITABLE FOR POLICY ANALYSIS

The analysis of the industrys primary production, transportation, processing and handling, biological production, quotas, markets, and contribution to the community economic base provides information on the major components of the industry. However, in order to determine the impact of changes in any one or several of those components on community and regional goals it is necessary to specify interrelationships between and among components (the development of interrelationships indicated in Figure I).

The initial usefullness of the model will be to demonstrate the critical component parts of the northern fishing relation to goals and how they interrelate. The model results will provide guidance in assessing future data requirements useful for contemporary decision-making.

In the proposed study a model integrating production, transportation, handling and processing alternatives to maximize returns (income) to fishermen and fisheries cooperatives would be constructed. In that model income maximization would be constrained by biological production capacity as reflected in quotas, available markets, minimum income to individual fishermen, labor availability and option to remain in local community. This will be accomplished through construction of an industry simulator. Development of a corresponding computer algorithm will provide for rapid analysis of the implications of alternate policy consideration for the industry with emphasis on income to fishermen and fisheries cooperatives.

Organization

This analysis would be carried forward by the Department of Northern Affairs but related throughout to a Federal-Provincial interdepartmental Advisory Committee and relationships established with local residents at South Indian Lake through a joint Co-op Development and Northern Affairs Extension arrangement.

APPENDIX C

CALCULATIONS TO DETERMINE INCOME IN KIND*

50 moose @ 400 lbs. of meat ea. i.e. 20,000 lbs. @ $1.50/lb. * (a conservative price allowance)	= $ 30,000
20 meals of waterfowl/family/year i.e. 20 X 70*X est. $5/meal	= $ 7,000
Equivalent of 4 meals of fish/wk/family 70 families X 4 meals X 52 wks. X $2.50/meal	= $ 36,400
Equivalent of 10 cords of wood @ $25/cord 70 X 10 X 25	= $ 17,500
Value of hides processed locally and used for moccasins and jackets, etc. for use and/or sale est. (1) 15-20 moc/hide @ $5/pr. 50 X (15-20) X 5 = $5,000 est. (2) 2 hides/1 jacket & 5 prs. moc., 25 X $100 (val. of Jact). + $5 X 5 (prs. moc.) 25 X $125 = $3,125 est. combination (1) & (2)	= $ 4,100
Value of beaver, muskrat, etc. consumed on the traplines and the community 50 families X $200/family	= $ 10,000
TOTAL	$105,000

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* A conservative estimate of 70 families has been used for these calculations.

APPENDIX D

SOUTH INDIAN LAKE

COMMUNITY INCOME FROM THE FISHERY - 1972/73

A. SUMMER - 1972

I INCOME TO FISHERMEN

LAKE	GROSS $*	PRODUCTION COSTS (8¢/lb. est.)	NET $		NUMBER OF LICENCES
Southern Indian	$149,000	$57,000	$ 92,000		52
Opachauanua	12,940	4,960	7,980		8-5= 3
Chapman/Torrance	2,430	1,160	1,270		4-3= 1
Dennison/MacKerracker	4,000	2,070	1,930		3-0= 3
McLeod	1,200	650	550		2-2= 0
TOTAL	$169,570	$65,860	$103,700	$103,700	59

Total number of men fishing = 59

II INCOME FROM FISH PACKING, ICE, ETC.**

i	Ice	$ 12,000	
ii	Packing	$ 88,000	
	TOTAL	$100,000	$100,000
	TOTAL EARNED INCOME ----------------------		$203,700

Member's Equity

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*Data on gross incomes to fishermen was obtained from the Manitoba Department of Mines, Resources and Environmental Management records.

**Data on income from fish packing, ice, etc. was obtained from the financial statements of the South Indian Lake Fishermen's Co-operative.

B. WINTER - 1973

I. INCOME TO FISHERMEN

LAKE	GROSS $	PRODUCTION COSTS (8¢/lb. est.)	NET $
South Indian	$ 41,150	$ 24,150	$ 17,000

COMBINED

Summer (to fishermen)	$ 103,700
Winter (to fishermen)	17,000
Packing	100,000
	$ 220,700

SOUTH INDIAN LAKE

COMMUNITY INCOME FROM THE FISHERY - 1971/72

A. SUMMER - 1971

I INCOME TO FISHERMEN

LAKE	GROSS $	PRODUCTION COSTS (8¢/lb. est.)	NET INCOME		NUMBER OF LICENCES
South Indian	$107,620	$52,100	$55,520		78
Opachauana	19,020	6,450	12,570		7 - 5 = 2
TOTAL	$126,640	$58,550	$68,090	$68,090	85

Total number of men fishing = 80

II WAGE INCOME FROM FISH PACKING

i	Ice	$ 3,070	
ii	Packing	28,060	
	TOTAL	$ 31,130	$31,130
	TOTAL EARNED INCOME ----------------		$99,220

B. WINTER - 1972

I INCOME TO FISHERMEN

		(10¢/lb. est.)		
South Indian	$ 37,320	$26,000	$11,320	52

II WAGE INCOME FROM FISH PACKING

i	Packing	$ 8,700	
	TOTAL	$ 8,700	$ 8,700
	TOTAL EARNED INCOME ---------------		$20,020

C. COMBINED INCOME FOR SUMMER 1971 AND WINTER 1972

i	Net Income to Fishermen	$ 79,410
ii	Wages	39,830
iii	Increase in member's equity	44,365
	TOTAL NET INCOME -------------	$163,605

SOUTH INDIAN LAKE
COMMUNITY INCOME FROM THE FISHERY - 1970/71

A. SUMMER - 1970

I INCOME TO FISHERMEN

LAKE	GROSS $	PRODUCTION COSTS (8¢/lb. est.)	NET INCOME		NUMBER OF LICENCES
South Indian	$77,400	$54,900	$22,500		78
Opachauanua	16,000	4,930	11,070		6-2= 4
Chapman/Torrance	820	420	400		3-1= 2
McLeod	1,360	720	640		3-3= 0
Thorsteinson	2,500	1,550	950		6-6= 0
TOTAL	$98,080	$62,500	$35,560	$35,560	78 "active"*

Total number of men fishing = 84

Defferred payments	$22,750
Total net income to fishermen	$58,300

II INCOME FROM FISH PACKING, ICE, ETC.

i	Ice	$ 4,250	
ii	Packing, etc	15,800	
	TOTAL	$20,050	$20,050
	TOTAL EARNED INCOME		$78,350

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* South Indian Lake Cooperative Fisheries Ltd. Financial Statement, April 30/71

**Financial Statements

B. WINTER - 1971

I INCOME TO FISHERMEN

LAKE	GROSS $	PRODUCTION COSTS (10¢/lb.)	NET INCOME		NUMBER OF FISHERMEN
South Indian	$49,230	$31,500	$17,730	$17,730	67

II INCOME FROM FISH PACKING, ETC.

i Salaries	$12,470
TOTAL EARNED INCOME --------------------	$30,200

C. TOTAL INCOME FOR SUMMER 1970 AND WINTER 1971

i Income to fishermen (net)	$76,030	84
ii Wages	32,520	
iii Increase in member's equity	23,735	
TOTAL EARNED INCOME ------------------	$132,285	

---

*Financial Statements

SOUTH INDIAN LAKE

COMMUNITY INCOME FROM THE FISHERY - 1969/70

A. SUMMER - 1969

I INCOME TO FISHERMEN

LAKE	GROSS $	PRODUCTION COSTS (8¢/lb. est.)	NET INCOME		NUMBER OF LICENCES
South Indian	$67,850	$49,600	$18,250		90
Opachauanua	10,670	8,000	2,670		8-1= 7
Partridge Breast	2,140	1,280	860		4-3= 1
Thorsteinson	3,100	2,000	1,100		4-2= 2
TOTAL	$83,760	$61,660	$22,880	$22,880	106

Total number of men fishing = 100

II INCOME FROM FISH PACKING, ICE, ETC.

i	Ice (est.)	$ 4,000	
ii	Packing (est.)	$15,000	
	TOTAL	$19,000	$19,000
	TOTAL EARNED INCOME ------------		$41,880

B. WINTER - 1970

I INCOME TO FISHERMEN

		(10¢/lb. est.)			
South Indian	$45,740	$33,700	$12,040	$12,040	56
		TOTAL		$12,040	

II INCOME FROM FISH PACKING

Salaries	$12,000	$12,000
TOTAL EARNED INCOME		$24,000

C. TOTAL INCOME FOR SUMMER 1969 AND WINTER 1970

i Net income to fishermen	$34,920
ii Wages	31,000
TOTAL NET INCOME	$65,920

INCOME FROM FISHING - BY YEAR

YEAR	GROSS	NET$	NUMBER OF LICENCED FISHERMEN
1972/73	210,700	120,700	80
1971/72	163,900	79,400	100 est.
1970/71	147,300	75,700	100 est.

INCOME FROM FISHING BY SOUTH INDIAN LAKE RESIDENTS - BY SEASON

SEASON	GROSS INCOME	NET INCOME	NUMBER OF LICENCED FISHERMEN WINTER	NUMBER OF LICENCED FISHERMEN SUMMER
Winter 1973	$ 35,100	$ 11,000		
Summer 1972	169,600	103,700		59
Winter 1972	37,300	11,300	52	
Summer 1971	126,600	68,100		80
Winter 1971	49,200	17,700	67	
Summer 1970	98,100	58,300		84
Winter 1970	45,700	12,040	56	
Summer 1969	83,500	22,880		100

WAGES PAID FOR PACKING FISH AND RELATED ACTIVITIES - SOUTH INDIAN LAKE COOPERATIVE

SEASON	WAGES PAID	ANNUAL WAGES PAID
Winter 1974		$200,000 projected *
Summer 1973		
Winter 1973	$34,200 est.	$109,200 **
Summer 1972	$75,000 est.	
Winter 1972	$ 8,700	$ 83,700 ***
Summer 1971	$31,100	$ 43,600
Winter 1971	$12,500	
Summer 1970	$20,000	$ 32,000
Winter 1970	$12,000	
Summer 1969	$19,000 est.	

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* Projected for the 1973 summer and the 1974 winter seasons

** Summer 1972 and winter 1973

*** Summer 1972 and winter 1972

APPENDIX E

Quotas and Harvests of Fish * on South Indian Lake

Season	Total Pounds	Quota	Taken on Quota	Remaining on Quota
1966/67	925,000	1,155,000	889,000	266,000
1967/68	769,000	1,155,000	748,000	407,000
1968/69	971,000	1,155,000	961,000	194,000
1969/70	957,000	1,155,000	953,000	202,000
1970/71	1,002,000	1,200,000	1,001,000	199,000
1971/72	927,000	1,200,000	926,000	274,000
1972/73	955,000	1,200,000	936,000	264,000

Source: Manitoba Department of Mines, Resources and Environmental Management

VOLUME OF UNHARVESTED FISH ON SOUTH INDIAN LAKE AND SURROUNDING LAKES*

LAKE	QUOTAS
Big Sand	110,000 lbs.
Otter Group	20,000 lbs.
Chipewayan	20,000 lbs.
Thorsteinson	30,000 lbs.
Partridge Breast	20,000 lbs.
Uhlman	20,000 lbs.
Barrington	55,000 lbs.
Eden	40,000 lbs.
North Knife	80,000 lbs.
Ashley	25,000 lbs.
Southern Indian	264,000 lbs.
	680,000 lbs.

Source: Manitoba Department of Mines, Resources and Environmental Management

APPENDIX F

SOCIAL ASSISTANCE PAYMENTS TO TREATY INDIANS IN NORTHERN MANITOBA FOR 1972

COMMUNITY	TOTAL PAYMENTS IN 1972 *	ESTIMATED POPULATION	PAYMENTS PER CAPITA
Shamattawa	106,320	450	236
York Factory	41,264	200	206
South Indian Lake	78,586	425	185
Brochet	100,694	550	183
Split Lake	163,328	1,000	163
Nelson House	177,553	1,100	161
Easterville	60,047	380	158
Moose Lake	43,028	300	143
The Pas	130,656	1,000	131
Shoal River	66,675	550	121
Grand Rapids	33,734	300	112
Fox Lake	23,413	250	94
Pukatawagon	82,897	1,000	83

Source: Department of Indian Affairs and Northern Development

SOUTH INDIAN LAKE
SOCIAL ASSISTANCE PAYMENTS

12 month period ending March, 1973

MONTH	$	# OF* PERSONS	$	# OF ** PERSONS	$	# OF PERSONS
	(Treaty)		(Non-Treaty)		(Total)	
April	5,822	211	803	13	6,685	224
May	6,231	216	1,068	23	7,299	240
June	6,779	272	816	23	7,595	295
July	4,835	146	816	23	5,651	169
August	4,926	157	1,074	25	6,000	182
September	3,789	81	954	24	4,743	105
October	6,246	238	887	23	7,133	261
November	7,648	300	887	23	8,535	323
December	7,029	326	887	23	7,916	349
January	6,254	213	892	23	7,146	236
February	7,224	336	1,351	43	8,575	379
March	5,946	223	817	23	6,763	246
	72,765	$\bar{x}$ 226	11,252	$\bar{x}$ 24	84,017	$\bar{x}$ 250

Population total (est.) = 590

- Percent of residents on welfare = 42%
- Percent of Treaty Indians on welfare = 57%
- Percent of Non-Treaty Indians on welfare = 8%
- $/capita payment - all residents =$142
- $/capita payment - Treaty =$182
- $/capita payment - Non-Treaty =$ 59

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*Source: Department of Indian Affairs and Northern Development

**Source: Manitoba Department of Health and Social Development

PROVINCIAL SOCIAL ASSISTANCE PAYMENTS TO SOUTH INDIAN LAKE RESIDENTS*

		SOCIAL		EMERGENCY		
YEAR	MONTH	# OF PERSONS	$	# OF PERSONS	$	TOTAL
1971	January	12	666	26	242	908
	February	12	685	17	340	1,025
	March	10	547	35	756	1,303
	April	13	804	28	946	1,750
	May	15	882	47	1,400	2,282
	June	15	882	16	406	1,288
	July	17	1,082	11	193	1,275
	August	14	917	-	-	917
	September	14	917	18	431	1,348
	October	13	837	8	82	919
	November	13	837	65	1,767	2,604
	December	13	783	51	1,283	2,066
		$\bar{x}$ 13	9,839	$\bar{x}$ 27	7,846	17,685
1972	January	13	808	68	2,206	3,014
	February	12	758	41	1,654	2,412
	March	12	758	26	789	1,547
	April	13	803	-	-	803
	May	13	803	11	265	1,068
	June	12	742	11	74	816
	July	12	742	11	74	816
	August	14	1,000	11	74	1,074
	September	13	880	11	74	954
	October	12	813	11	74	887
	November	12	813	11	74	887
	December	12	813	11	74	887
		$\bar{x}$ 12	9,733	$\bar{x}$ 18	5,432	15,165
1973	January	12	813	11	79	892
	February	12	779	31	572	1,351
	March	12	779	11	38	817
	April	12	779	32	503	1,282
		$\bar{x}$ 12	3,150	$\bar{x}$ 21	1,192	4,342

Source: Manitoba Department of Health and Social Development

1-41-2

Indian and Northern Affairs   Affaires indiennes et du Nord

SUMMARY OF SOCIAL ASSISTANCE
RELEVÉ DES SOMMES CONSACRÉES À L'ASSISTANCE SOCIALE

MONTH ENDING / MOIS SE TERMINANT LE   1972 - 1973   REGION / RÉGION   MANITOBA

ICT OR AGENCY ICT OU AGENCE	Health Reasons / Raisons de santé				Social Reasons / Raisons d'ordre social				Economic Reasons / Raisons d'ordre économique					
	Units / Groupes				Units / Groupes				Units / Groupes					
	Family / Familles				Family / Familles				Family / Familles					
SOUTH INDIAN LAKE	No. of families / Nombre de familles	Total persons / Nombre total de personnes	Total single / Nombre total de personnes seules	Dollars / Dollars	No. of families / Nombre de familles	Total persons / Nombre total de personnes	Total single / Nombre total de personnes seules	Dollars / Dollars	No. of families / Nombre de familles	Total persons / Nombre total de personnes	Total single / Nombre total de personnes seules	Dollars / Dollars		Total
APRIL 1972	10	60	3	2,594.00	4	15	1	881.00	29	132	-	2,357.00		
MAY 1972	9	54	3	2,798.00	12	40	-	1,191.00	17	117	2	2,242.00		5,832
JUNE 1972	9	54	3	2,798.00	6	33	1	948.74	27	181	-	3,032.53		6,231
JULY 1972	9	54	3	2,798.00	7	30	5	1,513.51	8	54	-	523.19		6,779
AUGUST 1972	9	54	3	2,798	6	27	5	1,317.84	10	68	-	810.61		4,935
SEPT. 1972	9	54	3	2,798.00	6	23	1	991.28	-	-	-	-		4,926
OCT. 1972	10	59	4	3,064.00	14	48	4	2,014.89	17	123	-	1,167.40		3,789
NO.V 1972	10	59	4	2,046.00	17	52	2	2,559.31	26	181	2	2,024.51		6,246
DEC. 1972	10	59	4	3,064.00	9	28	3	1,544.28	33	230	2	2,420.41		7,648
JAN. 1973	10	63	-	3,064.00	8	32	-	1,609.58	22	118	-	1,580.80		7,029
FEB. 1973	10	59	4	3,064.00	9	29	3	1,565.80	33	210	1	2,594.04		6,254
MAR. 1973	10	59	4	3,064.00	8	26	2	1,398.80	23	132	-	1,482.90		7,224
	X̄ 9.5	X̄ 57	X̄ 3	$33,953	X̄ = 9	X̄ = 40	X̄ 2	$17,531	X̄ 20	X̄129	X̄ 0.5	$20,231		5,946 $ 72,765
[illegible]				47%				25%				28%		

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Source: Department of Indian Affairs and Northern Development

APPENDIX G

GENERAL INTRODUCTION AND INTERVIEW GUIDE
FOR GATHERING DATA FOR A
SOUTHERN INDIAN LAKE COMMUNITY PROFILE

INTRODUCTION

We are a part of a study team whose task is to study the "Social and Economic Impact of Lake Winnipeg and Churchill River Diversion" on settlements directly affected.

A study agreement between Canada and Manitoba (1971) specifically provides for studies on:

> "1. Project Impact - as required, to assess the local impact in social and economic terms of the works, including the effects on employment, wage rates, transient population, trade, accessibility, mobility and communications, to consider and propose means of ameliorating any undesirable effects on the people of the communities in the area.
>
> 2. Potential Opportunities - as required, to determine means by which the people of the region can, in both the short and long term, obtain the greatest advantage from the social and economic opportunities resulting from construction of the works and associated developments."

For purposes of the study we take it as given that there is to be a hydro development on the Churchill-Nelson, etc., waterway system which will affect the community of South Indian Lake and other communities, in various ways and to varying degrees at various times in the future. In some cases, change effects that people will associate with the hydro development are effects that probably would have been experienced as a part of normal change caused by other factors, eg. improved transportation and communication; changes in economic base; changes in people migration patterns, etc. The hydro project will have accelerated that change, it will not have caused it. Wherever possible, it would be useful to distinguish between the possible sources of change.

We are concerned primarily with South Indian community at this time.

Our approach to the study is to develop a profile (a comprehensive word-picture) of the community in order that we may understand it better. In developing the profile we want to portray, as clearly and as accurately as we can, those things which make up the "way-of-life" in South Indian Lake. We want to be able to emphasize those parts of that way of life which are important to the people and to be able to understand and explain why these "things" are important; how the things which are important to the people will be affected; in what ways and to what extent by the proposed development.

June 1st is our target date for completing this phase of the study and for compiling an interim report. Normally a profile would be developed in consultation with the community. However, largely because of time constraint and partly because this community has had its fill recently with studies of various kinds we propose to develop the community profile through the knowledge and opinions of a number of people who know the community in various ways either because they have lived in the community in the past or are presently serving the community on an itinerant basis or both. As the profile evolves, we will check it out for accuracy with our knowledgeable non-resident contacts and with the South Indian Lake Community Council.

We appreciate your willingness to co-operate with us in putting this profile together.

PROFILE COMPONENTS

To be able to understand, properly assess and draw valid conclusions from the current situation of the people at South Indian Lake, it is essential to know a number of things about the community and its people.

1. History

It is important for example, to know the history of the community:

- the story of settlement; when, by whom, why
- the political, economic and social development of the community
- the kinds of relationships that traditionally have existed between the people and traders; between the people and government agencies; between the people and churches and so forth
- things that have happened in the life of the community which are important to the residents
- origin and development of social services eg.
    - education
    - health
    - welfare services
- how the people have moved around eg., in and out of the community; generally where, why and for how long; to the traplines and fish camps; out to wage employment; out to training; out to visit, etc.
- establishment, growth and current status of church missions

A brief, but proposed comprehensive, history of the community is being compiled as a separate part of the community profile.

2. Knowledge, Beliefs and Feelings

What do the people believe and how do they feel about the impending hydro development.

It is important for government policy and decision-makers to be aware of the community's beliefs and feelings and how perhaps these beliefs and feelings are rooted in a traditional value system.

What are the sources of the people's knowledge and information eg., word-of-mouth, or more formal, newspaper reports, radio, special reports.

It is important to know and to use the sources that are effective in getting accurate information to the people in the community, and in communicating generally with the community.

3. Goals

It is important to know what goal or goals the community has for the future, especially in respect to the proposed development.

Is there a single community goal, or are there several goals that various groups and/or individuals in the community want to achieve. Goals may or may not be consistent, and they may be wholly or partially competitive or complementary.

Without this knowledge, policy and decision-makers and the community could be attempting to communicate on different frequencies.

4. Decision-Making

How are public decisions made in the community and who are the principal people involved in making them?

The more that is known about this vital community process the more matters are likely to be referred to it for decision, and the greater will be the respect for the community decisions that are made.

5. Leadership

Most communities have formal, usually elected leaders. But often there are leaders in a community who are never elected. They may be people who are knowledgeable in certain areas or people who have had experiences that are useful to the community. They may be permanent residents of the community or people who are in the community for a relatively short time to do a particular job. Leaders sometimes are people from outside the community. But always they are people with influence, whose opinions are respected, and generally whose advice and suggestions are followed.

It is important for anyone working with, or attempting to relate to the community, to know who the leaders are, and to learn what makes them leaders in the eyes of the community.

To not recognize the leadership structure in South Indian Lake is not to relate to the community effectively. Hence the importance of understanding what that leadership structure is.

We often find different kinds of people in leadership positions in a community. Sometimes there is:

- the contented resident - life long resident who is quite content with his lot where he is and who will resist any and all development which may threaten to change it.
- the displaced resident - one who has come from another community but who now lives in this community because he wants to. Otherwise he is similar to the contented resident.
- the reluctant resident - a life long resident who remains in the community unwillingly because of family ties, lack of job skills, etc.
- the returned emigree - born in community - has had experience on outside, but chose to return to live. He is now a contented resident.
- the disappointed migrant - born in community - has had experience on outside - failed to establish himself and so was forced to return.
- the immigrant professional - resident or itinerant nurses, teachers, government workers, clergy, etc.

Various people perform their leadership function differently, and display varying attitudes towards matters affecting the community.

6. Power Structure

The people who are the community leaders and who make decisions are the people who get things done or who assist, encourage, persuade or generally cause the community to get things done.

The power structure consists not just of the leaders and decision-makers, but how they relate to one another, or influence one another to exercise power and get things done. Sometimes people in power positions form alliances to strengthen their position. At other times they compete with each other for dominance.

It is important to recognize that things get done through, and generally only with the sanction of people in power positions. The community's may be susceptible to facts, new ideas and change or it may resist them. Effective working relations with the community depends to a large extent on understanding and acknowledging its power base.

7. Community Organization

How does the community organize itself for the ordinary, every day business of living.

How does it organize itself to meet new and extraordinary situations.

How is it set up to govern itself.

8. Community Institutions

When communities do things in particular ways over time, these ways tend to develop into familiar patterns. Often the patterns resist change and if and when they do change, it is usually an adaptation developed slowly over time, to meet new situations or new needs more effectively. It is useful to know the kinds of institutions the people of South Indian Lake have developed, allowed to develop or relate to or use, to achieve various goals and meet particular needs. The community system is such that various kinds of action taken are taken through channels or institutions that traditionally have been used for the purpose.

Usually in a community the single most important institution is the family. Certainly the nuclear family unit is important. One of its main functions is socialization and social control. Also it is the basic economic unit in the community - both these functions though are shared by the extended family grouping which also feature prominantly in community decision-making.

Other institutions exist in South Indian Lake, eg., the economic - the Hudson Bay Co., the Co-op; the educational - the school, the information centre; the civic - the Council, the flood committee; political - Manitoba Indian Brotherhood, Manitoba Metis Federation; religious, social, etc. Institutions are functional. They exist for a purpose, or they don't exist.

9. Economy

Naturally, it is important to understand the economy of the community i.e., the sources of earned income; other income; how money income is supplemented by food and materials gathered from the land.

The South Indian Lake present economy will be analysed thoroughly with a view to making projections about how it may be affected positively and/or negatively in the short and long term, by the proposed hydro development.

The economy is the subject of a separate detailed study and analysis.

10. The People and Family Characteristics

It is important to be able to make projections about population growth so as to be able to make reasonably accurate projections about such things as future economy needs; about the need in the future for health and education services; about the needs for housing and so forth.

To make such projections about the future population, it is necessary to learn many things about the present population; such things as age and sex distribution, normal age of mother at first birth, average size of families, net population increase, family structures, health factors and nutrition, education achievement and so forth. In addition, it is necessary to understand the process of migration in and out of the community in order to ascertain how the relationships between human and other resources have been changing and how may they be expected to change in the future.

This demographic, like the economic, will be a subject for separate detailed study and analysis so that the final South Indian Lake Community Profile will be as comprehensive as possible.

11. Personal Opinion

There will be opportunity during the interviews for participants to offer additional further information, observation and opinions related to South Indian Lake which the foregoing specific topics may not have evoked. Such additional inputs by the participants will be taken into account in preparing our report.

METHOD, INTRODUCTION & DISCUSSION QUESTIONS USED WITH SOUTH INDIAN LAKE STUDENTS IN RESIDENCE AT FRONTIER COLLEGIATE INSTITUTE, CRANBERRY PORTAGE, MAY 7, 1973

METHOD:

Initially we talked with the Principal, Frontier Collegiate Institute, Mr. Keith Long to ascertain 1) if from the Collegiate's point of view it would be feasible for us to visit the Collegiate to talk with the students as a group and 2) if the students would be prepared to talk with us at this time.

Mr. Long approved of our visit and met with the students and obtained their consent to meet with us. Meanwhile, we had asked Mr. Long to indicate to the students that we would seek approval of the South Indian Community Council before we met with them. We discussed our proposed visit with the students at a joint meeting of the Council and Flood Committee representation at South Indian Lake on Thursday, May 3rd. The community representatives at the meeting approved of our approaching the students as proposed.

We visited with Mr. Long at Cranberry Portage in the early afternoon of May 7th. We reviewed our purpose with him and he agreed to call the students together when school was out that day. We met with the students at that time and discussed what we were about, using the attached Introduction and Guideline Questions. This initial discussion lasted one hour. We agreed to meet again from 7:30 - 10:00 p.m. to get their response to the questions.

In the afternoon eight students, six girls and two boys from grades IX - XII attended. In the evening the two boys and a girl did not attend because of other commitments.

Our plan had been to approach the discussion with two groups of four each. However, the participants preferred to remain in one group. They discussed each question initially in Cree, making notes in English and giving us the results of their discussion, which we then discussed in greater depth as the students elaborated upon their initial responses.

After a very brief period of reticence all of the students entered into discussion with great gusto.

INTRODUCTION:

On the basis that there is to be a hydro development on the Nelson-Churchill River river system, the Federal and Provincial Governments are jointly sharing in the costs of a number of comprehensive studies.

There will be engineering studies, biological studies and environmental studies to determine the physical and biological impact of the proposed raising of water levels on communities, including South Indian.

Our study, the latest to get started, is concerned with the social and economic impact that the development may have on people and their traditional life styles.

The economic aspect will be concerned especially with how the people traditionally have earned a living - by fishing, and trapping, and how they have supplemented cash income from these sources, with food from hunting and obtaining their own fuel, with an emphasis on predicting what may happen to these resources and these various sources of income.

The social aspect will be concerned with the history of the community development:

- demographic or population studies which will attempt to make projections about population growth at various times in the future so that there may be a better assessment of local economic needs; about social needs such as education, health care and housing
- the social structure of the community which includes such things as:
    - what the people believe and how they feel
    - what goal or goals the community may have
    - who the leaders are and what the people expect of their leaders
    - how decisions are made and who are the people who feature prominently in community decision-making
    - who are the people with influence and authority in the community
    - what organizations exist in the community and what is their function eg. the economic institution consists of The Bay and The Co-op, whose function respectively are to trade and sell fish and supply fishermen with fishing equipment and supplies

GUIDELINE DISCUSSION QUESTIONS:

1. Which of the following words best describe the feelings of a lot of people in the community about the proposed development?

   excitement
   uncertainty
   frustration
   despair
   determination
   bewilderment
   mistrust
   fear
   hope
   sadness
   anticipation
   anger
   annoyance
   satisfaction

2. In a sentence or two, how would you describe what most of the people believe about the proposed development.

3. What are the people's chief sources of information eg. special reports?

4. What goal or goals do you believe most of the people in the community have re the proposed development?

5. Who, in your opinion, are the six key leaders in the community. (For our purpose leaders are persons to whom people in the community look to get things done; they are people who have influence and/or authority; they may be elected officials or not elected; they may be resident in the community or regular visitors to the community).

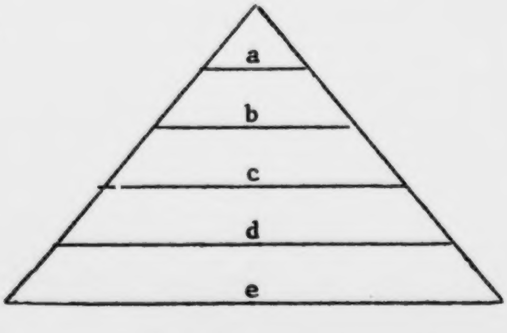
6. Can you list three community decisions that have been made in the community recently. (Please describe the various steps and include the people who were most involved in making these decisions).

7. What organizations or institutions exist in the community and what purpose do they serve,

   eg. there are economic institutions,
   - The Bay - the purpose is to trade
   - The Co-op - the purpose is to sell fish and provide fishermen with equipment and supplies

8. If we could represent which people or institutions in the community are most influential in the form of a pyramid, who would be at the top and bottom, and at various stages in between.

eg.



"a" might be the trader or government officials or in some communities it might be the Church or Council

"b" might be the family heads

"c" might be the nursing station

"d" could be shared by the teachers (school) and police

"e" might be the people in the community including or excluding younger people

9. Can you list from your memory people who have left the community to take up permanent residence elsewhere?

a) single females
b) single males
c) married couples (families)

In your opinion who are there more of in South Indian Lake - young single males or young single females (let's take young to mean 15 years and up).

Why do you think this situation is the way it is?

INTRODUCTION AND DISCUSSION WITH SOUTH INDIAN LAKE COUNCIL AND FLOOD COMMITTEE REPRESENTATIVES AT SOUTH INDIAN LAKE, MAY 3rd & 4th, 1973

Accompanied by Roger Stagg, the Northern Affairs Co-ordinator, we met with the Deputy Mayor, two Councillors, a representative of the Flood Committee and the newly appointed Information-Communications Co-ordinator for South Indian Lake.

Our purpose in the initial meeting was to explain the what, why and how of the Social Economic Impact Study; to explain that we proposed to visit with the South Indian Lake students at Cranberry Portage; to solicit the Council's co-operation in proceeding with the study; to invite community participation in the study if the Council agreed and finally, to encourage those attending the meeting to respond as they saw fit to what we had said or to raise any other matters they might wish to discuss with us. We agreed that whether or not the study would include community participants in providing information, we would, when we had put together the information we had gathered from other sources into some kind of word description of the community and if the Council wished it, check out the picture for accuracy with the Council and Flood Committee. The representatives indicated that they would like us to do that.

There was general agreement that the community would wish to participate in the study as we had described it. We explained that it would not be practicable to talk to everybody in the community at this time. Instead, we offered to talk with a crude sampling of the community population that the Council would help us select.

We agreed to discuss a procedure and set of guideline topics for discussion with the Information-Communication Co-ordinator the following morning. The proposal was that the Information-Communication Co-ordinator would discuss our paper with the Council for their sanction and confirm with us a convenient date for us to visit the community for the purpose of carrying out the interviews.

This set of procedures and guidelines included the following:

1. We would need the formal approval of Council to proceed.

2. We suggested the following groups for sample:
   - -An older man (60+ An older woman (60+
   - -A middle-aged man (35+ A middle-aged woman (35+
   - -A younger man (17-35 A younger woman (17-35
   - -Some woman - other than above - in any elected position
   - -An outsider living in the community (5 months or more)

   This would give us a sample of 9 persons.

3. The suggestion was that the names of eight people, representative of each of the nine groupings be placed in a bag one group at a time and that one name be drawn. The name drawn would determine the representative person of his or her group that we would include in our nine people for interview.

4. The Information-Communication Co-ordinator agreed to carry out this procedure, explain the purpose of the interviews and obtain each person's consent to participate.

5. Explanation to potential participants would include the following:

   a) the interview would take between 2 and 3 hours,
   b) interviews would be carried out with individuals, one-at-a-time, (if the individuals wish, we could arrange group discussion - either one or two groups instead of individual interviews).

c) topics for discussion would include:

-people's feelings about the proposed Hydro development -- including their own feelings and what they believe to be the feelings of others,

-people's feelings about changes occurring in community which are not related directly to the proposed development,

-what the people know about the development,

-generally how the people get their information, eg. from their leaders, from listening to radio, attending meetings, special reports, visitors to the community, etc.,

-who are the community leaders - what makes them leaders, eg. they may be elected, or they may have special knowledge or experience, or they may speak out well and so forth. Sometimes people who don't live in the community influence community decisions,

-some idea of how decisions are made in the community eg. large public meetings, small group meetings -- discussion over several days -- kind of voting at meetings -- majority vote or attempt to get full agreement, etc.,

Think of some decisions that have been made recently and how they have been made,

-various kinds of organizations or committees in the community and what they do, eg.,

The Council
School Committees
Church Boards
P.E.P. Committee
Any Church or social groups
The Flood Committee
Any youth organizations; and so forth,

(Who are the leaders of these groups)

-some indication of the dollar value that can be put on fuel wood and the value of moose hides -- for people's own use eg. moccasins, jackets, etc., or for use in handicrafts,

-any other general community concerns or interests that haven't been brought out in the above.

Another topic that we would have hoped to discuss with the community representatives which we did not include in the above, is the numbers of people who leave the community each year, or who have left the community over the years intending to take up permanent residence somewhere else.

We were able to return on June 6th and 7th to present our description of their community to the Community Council and the Flood Committee in order to check out the accuracy of our findings.

APPENDIX H

I THE CHEMAHAWIN RELOCATION
(A Manitoba Experience)

1. The Announcement
2. The Negotiating Process
3. The Negotiating Mechanism
4. Samples of Decision-Making
5. Social Consequences of Relocation
6. Conclusions

II ETHNIC GROUP LAND RIGHTS IN THE MODERN STATE: Three Case Studies
(An American Experience)

III ADMINISTRATIVE PROBLEMS OF THE RESETTLEMENT OF TEMA, by Peter Du Sautoy
(An African Experience)

IV DEVELOPMENT AND JAMES BAY: SOCIO-ECONOMIC IMPLICATIONS OF THE HYDRO-ELECTRIC PROJECT
(A Quebec Experience)

V THE USE OF SOCIAL SCIENTISTS BY THE WAR RELOCATION AUTHORITY, by Edward H. Spicer

I THE CHEMAHAWIN RELOCATION

1. THE ANNOUNCEMENT

The Grand Rapids Hydro Development project was announced in the Speech from the Throne in January, 1960. In the Spring of 1960 a Grand Rapids Forebay Administrative Committee was announced with terms of reference to:

i) Co-ordinate all government agencies involved

ii) Negotiate with the people of Chemahawin

iii) Keep the people informed of developments concerning the relocation and the power project

iv) Inform residents of Chemahawin of decisions made in Winnipeg

v) Provide administrative services

The Committee was made up of the Assistant Deputy Minister of Mines, Resources and Environmental Management, as Chairman, the Deputy Minister of Welfare, the Director of Engineering for Manitoba Hydro with the Regional Superintendent of Indian Affairs as ex officer member.

The Committee visited Chemahawin in October 1960 and are quoted as having said "We are here to tell you what will happen after the power plant goes into operation". The Committee acknowledged that the people had rights which the Committee "are going to try and recognize". The people were told at the time that "The spring of 1964 will have to see Chemahawin at the new site". The Chairman assured the people that they would be provided for "____half-breeds as well as Indians". (One of the initial reactions to this first meeting was a concern expressed by some older residents for the graveyard. They asked that a concrete dyke be built around it to protect it from water and to prevent rats from burrowing through).

Well into the spring of 1961 local leaders were expressing doubt and anxiety while the Indian Affairs Superintendent and the Forebay Committee field representatives were experiencing difficulty trying to impress upon the people the inevitability of flooding and the "irrevocability of the basic decision to build the power plant and move the people". The local people were seen to be "persisting in their misunderstanding". Some of the misunderstanding was attributed to a language barrier and so a "dis-interested" interpreter - an Indian from The Pas - was included in all discussion at Chemahawin over the next couple of years.

Later, in March 1962, during the time the Committee was discussing terms of and conditions of settlement, the Manitoba Hydro representative on the Committee was quoted in the minutes of a meeting at Chemahawin as saying "Manitoba Hydro did not conceive the project - it was the Government of Manitoba . I would like to say further that this work is going ahead. We have already spent $20 million and regardless of the Chemahawin problem the project will have to go on. We all hope we can be settled by June 1 and you will have to trust us."

Thus were the people of Chemahawin told.

2. THE NEGOTIATING PROCESS

The negotiating between Government and Chemahawin may be said to have begun in October 1960 when the Forebay Committee, visiting Chemahawin for the first time officially, stated that the purpose of their visit was to tell the people what would happen after the hydro plant went into operation. Technically, however, negotiations began when in a letter to the Chief dated February 14, 1962, the Chairman of the Forebay Committee said "We therefore feel that the time has come for the Government Committee to meet with the Chemahawin Committee to decide what should be done". Correspondence between the Committee and the community was through the Chief of the Band because presumably, the non-Treaty group were not formally organized into a Band or Council. However, the Committee Chairman pointed out on several occasions that all arrangements made with the community would apply "equitably to Indian and Metis".

This initial letter to the Chemahawin referred to such matters:

- The implication of flooding and relocation on the traditional economy in the area i.e., effects on fishing, trapping and hunting
- Commercial operation - Co-operative or free trader
- Other implications of relocation such as town planning, shoreline clearing, dock facilities, school, church, recreation, nursing station
- Housing
- Reserve boundaries

This preliminary letter was the basis for fieldwork by the Committee's field representative and the forerunner to a meeting by the Forebay Committee and the Community in March 1962. The purpose of this meeting was to "talk about what has to be done after the water comes up".

The results of discussion to that point were formalized in a letter to the Chief dated June 7, 1962 and subsequently referred to as the "Letter of Intent". The letter made commitments of various degrees, some finite, some less finite and even ambiguous, covering twenty "items" as follows: Housing and Outbuildings; Town Planning and Community Development; Roads; Public Utilities; Supply Facilities; Recreation; Cemetaries; Hay and Pasture; Hunting, Trapping and Fishing; Industries; Health; Land; Use of Local Labour; Shoreline Clearing; Land Exchange; Residential Lots to Metis; Economic Development.

The offer was to terminate on April 1, 1974. On the basis of these undertakings the Chemahawin Band was to pass a resolution "...accepting this offer for the exchange of land for the Cedar Lake Reserve lands required for Forebay purposes..."

The required resolution was finally passed on January 30, 1963. Meanwhile the Community was apprehensive and uncertain. They remained unconvinced of Government's good intent. The Local Forebay Committee responded to the June 7 Letter of Intent with a letter to the Forebay Committee dated October 22, 1962, demanding clarification and definite commitment by Government to several points including: provision of electricity to the

Community; reserved fishing rights on the north end of Lake Winnipegosis just in case Cedar Lake would not become productive as soon after flooding as was predicted; negotiate new hunting and trapping areas. (The people believed most of their traditional trapping area would be destroyed. There response also was based on the fact that a "large area, immediately to the south and east of the new site has lost its potential for wildlife for many years to come due to fires of the summer of 1961 and 1962"); shoreline clearing (the local committee foresaw that when the area is flooded trees and shrub, if left, would cause considerable damage to nets, boats and motors).

The October 22 letter concluded with the statement "We, the committee, feel that if we cannot get agreement to our main request, it will be necessary to reconsider our position.... We feel that this letter is similar to a Treaty. We cannot accept what we do not think is right, as it is not we who will suffer for our mistake, but our children and our children's children".

The Forebay Committee was quick to reply (Nov.5/62) and to reiterate the Government's position. Electricity would be too expensive to bring in. They would set up another committee to look into economic development. The trapping/hunting question was being referred to the Game Branch. Fishing rights on North Lake Winnipegosis was out of the question since the Lake was already over-crowded. This reply concluded with the statement in response to the local committee suggestion that they might have to reconsider their position, "This is no time for you or for us to reconsider our Agreement as this would delay the great deal of work to be done".

The matter of electric power to the community was referred to the Economic Development Committee and was subsequently paid for from funds provided by Manitoba Hydro and which Government had earmarked for economic development in the area. When the Chairman was reminded that the promise of electric power had been made at the time the new site was being selected he replied "...they were told that power was a possibility and a road as well to site No. 2...but we did not say that power would be supplied at Government expense".

One year after the date of the Letter of Intent, June 7, 1963 the local people met and expressed concern about promises not being kept. They requested assurance from the Premier and suggested that if reassurance was not forthcoming they would take their case to the news media.

The Premier offered his reassurance in a letter in September, 1963, indicating that all the commitments made in the Letter of Intent were as binding on Government as if he had signed the letter himself. The people were pleased with the Premier's reassurance and told the Committee so. However, they were still not convinced, and as they approached the date for relocation they grew more apprehensive. At an unusually formal meeting at Chemahawin with the Chairman, the people had elected a spokesman, Walter Mink, who began his presentation thus, "The local committee asked me to ask these things. Our local committee has discussed these things with the residents. We would like to know that we are not against anyone, but things that are important to our people and we do not expect answers to all these things but would like all the answers you can give. We want you to know that until these things are done we will stay here at Cedar Lake".

His questions related to:

- Financial and technical assistance for co-operative development
- Traplines - are we going to get more trapline area or not
- Fishing - what happens if Cedar Lake doesn't produce after flooding
- Reserve boundary

The Chairman's replies were not reassuring to the people. The Chief, Donald Easter observed, "The things are very good and if the things we asked for are granted, things will be good". McLeod George emphasized "I would like to say that the things we have asked is what we want and if we don't get them we are prepared to stay here." And so for the first time the three Treaty extended family leaders, the Easters, the Minks and the McLeods were registering their respective positions. This position was formalized in a letter from the Band to the Chairman dated January 24, 1964 as follows: (copy of letter att.)

Still the people were not reconciled. The Band especially was digging in. On June 29, 1964 less than a month before the physical relocation was to take place they headed a list of eleven demands of the

Forebay Committee with the ultimation "Before we will consent to moving to the new site and allow flooding of our present reserve lands, we will require the following:". In summary, the demands included a letter from the Committee giving guarantees re:

- Arrangements to be made with Free Trader for him to stay with the community until the move.
- The matter of Reserve boundaries be agreed to.
- Land exchange
- Electrical power by a Hydro line by January 31, 1965 - meanwhile Diesel power would suffice.
- Trapline question to be resolved.
- Economic development funds to be provided.
- Fireguard around community of Easterville.
- Housing available for all families at time of move
- Releases on property at Chemahawin subject to final inspection of houses at Easterville by I.A.B. official.
- Hay field to be cleared of stones.

The communique from the Band concluded that "...upon acceptance by the Grand Rapids Administration Committee of the foregoing eleven points the move to the new Easterville Settlement will begin on a mutually acceptable date and further that, once the move is completed in all respects, it will be in order to begin flooding of the Chemahawin Indian Reserve No. 32."

This submission was discussed at a meeting of the Committee and the people at Cedar Lake on July 16th, where the various issues apparently were resolved to the satisfaction of the people. Additional assurance as to the Government's commitments contained in the Letter of Intent was given by the Premier as a result of this meeting, and the trek from Chemahawin to Easterville began. However, the Easterville people continued to make representation to the Premier's office expressing concern about commitments that in their opinion had not been kept. Finally, in August 1970 lawyers for the Band filed a Statement of Claim against the Government of Manitoba, The Manitoba Hydro-Electric Board and The Grand Rapids Forebay Committee stating "The Plaintiffs say that the intent and purpose of said letter (Letter of Intent, June 7, 1962) was to induce the Band to exchange the land aforesaid and that the commitments of the Province of Manitoba and Hydro set forth in the said letter are not the same as originally orally agreed on, and moreover offers and commitments have not been honoured and the Province of Manitoba and Hydro have failed, neglected or refuse to complete their obligation under the said Agreement".

The Province immediately filed a Statement of Defence stating "Notwithstanding any of the legal defences contained herein and without admitting the allegations contained in the Statement of Claim, the Government defendant hereby acknowledges its Governmental responsibility and obligations to the residents of Easterville and states that the Government defendant is doing and is intending to do everything that has to be done in the interest of the said residents under schedule (Letter of Intent) to the Statement of Claim."

The case is somewhere in the Court process. Meanwhile the Grand Rapids Forebay continues to relate to the community in matters of mutual concern and in effect, negotiations continue.

Cedar Lake, Manitoba
January 24th, 1964

Mr. S. W. Schortinghuis,
Chairman,
Grand Rapids Forebay Administration Committee,
Norlyn Building,
Winnipeg, Man.

Dear Mr. Schortinghuis:

We, the Council of the Chemawawin Band, and our people have had many meetings with you, with representatives of your Committee and other Provincial Government officers in regard to our move from Cedar Lake to Easterville. In all these meetings we have asked for one thing and another which, we feel, are very necessary to our future well-being and economic stability. In almost all cases verbal or written confirmation to our requests has only partially been given, refused outright or an alternative proposed.

Because the time is fast approaching when you will require us to move to the new site at Easterville we feel it is only fair to advise you now of what we must have before we will move from our present location on the Chemawawin Reserve. The items to which we require an affirmative reply, in writing, are as follows:

1. That the settlement of Easterville will be provided with electricity by means of a transmission line from Grand Rapids,
2. That the area requested by us for trapping and hunting is approved,
3. That the Reserve boundary, on the Cedar Lake side of the Easterville settlement, is approved as requested,
4. That our economic future is not governed by a set amount of money as has been stated to us but is governed by our needs between now and April 1st, 1974,
5. That in the establishment of Co-operatives we receive all the technical assistance we will require, and reasonable financial backing until such time as we are capable of taking over entirely on our own.

(cont'd.)

We do not feel, in any way, that our demands are unreasonable, and our only interest is to assure our own future and the future of our children.

Wilson Easter
Wilson Easter - Local
Forebay Committee

Walter Mink
Walter Mink - Local
Forebay Committee

McLeod George
McLeod George - Local
Forebay Committee

Donald Easter
Donald Easter - Chief

William Captain
William Captain - Councillor

Robert Mink
Robert Mink - Councillor

c.c. J. R. Bell
c.c. E.R.Courchene

3. THE NEGOTIATING MECHANISM

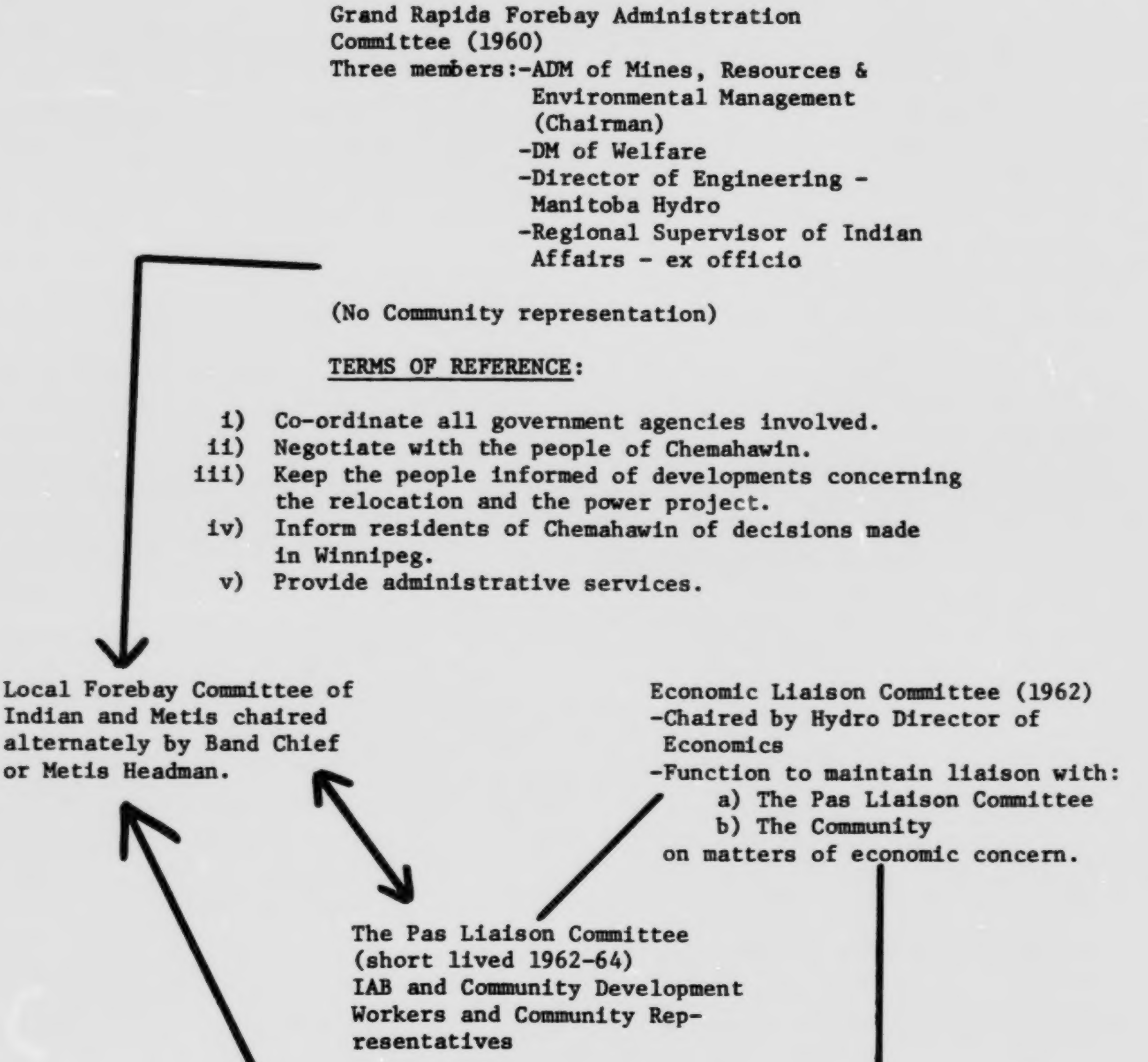
The community did not have legal counsel until November 1968, eight years after the Forebay Committee's first official approach to the community and four years after relocation. When a lawyer was retained he announced to the Committee that he would be representing the community in all matters dealing with the Forebay. This lawyer-client relationship has dwindled in the meantime.

When negotiations began in 1960-61 the population of about 350 included a band of approximately 250 Indians, and 100 Metis. The Indians had their band council and were associated closely with the Indian Affairs Agency at The Pas. The Metis had no formal organization and had no close association with any particular Government department or agency. The Forebay Committee always had an Indian Affairs representative attached to it and in addition, in discussions with the Forebay Committee there was always a local Indian Affairs agent to advocate the Indian's case. That person was a key actor in negotiations.

Early in the negotiations the Committee appointed a "field representative" who saw himself and was seen as an agent of the Committee. He did not "play any advocacy role on behalf of the people. He did a lot of trouble shooting for the Committee in the process of interpreting government position as it had been given to him by the Committee. The Committee also employed a project manager and a building supervisor. While they were concerned primarily with the physical aspects of the relocation they did nevertheless participate in discussions with the people and to that extent featured in negotiations.

Late in 1962 the Government appointed a Cree speaking Indian a Community Development Worker. He was able to establish a trust relationship with the people immediately. The significant immediate effect of his work was to strengthen the position of the local Forebay committee. This was reflected in the more sophisticated, more articulate written and oral representations by the local people to the Forebay Committee. This person was identified with the local people, often times to the displeasure of the Committee.

The negotiating mechanism was an unwieldly, cumbersome network of committee's represented in the attached schematic. Perhaps the greatest single weakness of the committee structure was the lack of meaningful participation by the local people in planning and implementing decisions.



Grand Rapids Forebay Administration Committee (1960)
Three members:-ADM of Mines, Resources & Environmental Management (Chairman)
-DM of Welfare
-Director of Engineering - Manitoba Hydro
-Regional Supervisor of Indian Affairs - ex officio

(No Community representation)

TERMS OF REFERENCE:

i) Co-ordinate all government agencies involved.
ii) Negotiate with the people of Chemahawin.
iii) Keep the people informed of developments concerning the relocation and the power project.
iv) Inform residents of Chemahawin of decisions made in Winnipeg.
v) Provide administrative services.

Local Forebay Committee of Indian and Metis chaired alternately by Band Chief or Metis Headman.

Economic Liaison Committee (1962)
-Chaired by Hydro Director of Economics
-Function to maintain liaison with:
a) The Pas Liaison Committee
b) The Community
on matters of economic concern.

The Pas Liaison Committee
(short lived 1962-64)
IAB and Community Development Workers and Community Representatives

Grand Rapids Forebay (reconstructed November 1970).
Chairmanship-Mines, Resources & Environ. Mgmt.
Membership-Health & Social Development, Industry & Commerce, Mines, Resources & Environ. Mgmt Northern Region, Indian Affairs

TERMS OF REFERENCE: i) To ensure that commitments still outstanding are fulfilled.
To ensure co-ordination between operating departments in carrying out their ongoing responsibilities to the communities of Easterville & Moose Lake in recognition of the special circumstances of the area. iii) To expend balance of money remaining in Grand Rapids Forebay Trust A/C in a manner to ensure the maximum advantage to the communities for their long term future.

Became the Economic Development Committee in 1964 - Chaired by Community Development members: -Director of Co-operative Development
-Department of Finance Representative
-IAB ex officio
Function:-to carry out commitments in Letter of Intent having to do with economic matters.(Disbanded in 1968)

4. SAMPLES OF DECISION-MAKING

I. Selecting a Site

Site Inspection and Selection at Cedar Lake

At the Cedar Lake Forebay Meeting held on October 13th, 1960, the Chairman of the Forebay Administration Committee, Mr. Schortinghuis, asked the residents to form a local committee to work with the field representatives in selecting a new village site. He also said that when the various suggested sites had been plotted, the people who wished would be taken to examine these, at government expense, and expressed the hope a permanent site could be selected by the people of the community at a not too distant time.

Your field representative proceeded to work with the committee in getting the suggested sites lined up and to make plans designed to get the necessary inspections carried out, and the ultimate selection made.

Maps, air photos. etc., were obtained and some air flights made to commence the search for physically suitable sites on the south shore. By freeze-up your representative had plotted all the sites, including all those suggested by the residents, as well as those suggested or found by officials, eight in number. These had been inspected and a quick report made on each. Later a ninth site was added.

When ice travel was possible a bombardier was used and a start was made to take, first the committee, then other residents, to examine these sites. A two vehicle patrol with fifteen local people examined two of the best thought-of (locally) sites but this was not satisfying because the snow prevented decisive inspection. Thenceforth the bombardier program was reduced, and two trips to take the local committee to see (and thus dispose of) sites 8 and 9 were carried out.

Among the people (and to a lesser extent the local committee) an air of wait-and-see prevailed during the winter, but the matter of site selection and our plan to reach it by June 1st was brought more forcibly before them at meetings as time progressed.

With the coming of spring and the return of the men from the rat swamps definite plans to take people out by boat to see Site 2 came into action

The first expedition of 5 boats containing 20 people (who had entered, and were listed) was lead by the Chief and leading committee man. It was a two day event and the people had a good chance to examine the place thoroughly and comprised of 29 people on a one long day trip. This was originally lead by the writer and Mr. Bell, each with his own boat, but the wind rendered the lake unsafe for such travel, and on the following day the field representatives were forced to proceed to Moose Lake scheduled meeting and leave the expedition again in the safe hands of Chief Donald Easter and leading committee man, McLeod George.

Both these expeditions were all-expense, and full indemnity paid tours. The result was gratifying remarks from those who took in the excursions. The committee men took advantage of the surge in favour of Site 2, and held a meeting to promote the climax, which became the meeting of decision on June 3rd.

The result of the voting was radioed to the writer at The Pas who in turn passed the tidings to Mr. Devenny, Bell and McLean.

The fact is recorded that each resident, who requested to do so, was taken to inspect Site 2. Some women applied and were taken. None were refused. None asked to see any of the other sites. The emphasis on Site 2 became a fixture.

The following is a transcript of the written record of two meetings held at Cedar Lake by the Cedar Lake Forebay Committee with the residents concerning their choice of a new village site. The first meeting on May 20th, 1961, consisted of two parts, an afternoon meeting, and an evening meeting. On this occasion the people appeared to make up their minds, and at the second (or final) meeting, made their decision and put their names on the line accordingly.

At the meeting of decision "to go(to Site 2), or not to go, that was the question". It had become very well understood that no other location could compare with Site 2.

Chemahawin Meeting - Concerning the Move

3:20 Meeting open. - First Meeting of the day. May 20th, 1961.

Chairman Chief Donald Easter.

Committee McLeod George, 17 people present at this meeting.

Secretary Tom Mink.

First thing Chief discuss our new Reserve.

Chief says the government promised us everything. We want electricity. Well I think Government is very good to everybody. So let's think it over. This is very important.

McLeod George says It's okay with me. We have to move. We can't stay here.

Adam Steward says This is just first time I been in band meeting. But I'm happy to say a few words. I like all your kids are well. And I am willing to go. Maybe I can't go, if I'm die.

Cordie George says First thing, I like to discuss about our new Reserve. Government say we got to move. So we got to talk about it.

Daniel Kennedy says I like to go anywhere. It's up to Chief. I will go wherever he goes. That's all I got to say.

C. Thomas says I like to discuss our new Reserve. We got to use our heads to think in future.

John Lachose says I would like to go and see the townsite. And look at it. Maybe I don't like it.

Walter Mink says I like to discuss the matters about our new Reserve.

William Captain says I like to talk about our new townsite. We are going to have electric lights and everything. We should be proud of it. This is very important, and I'll do what Chief says. I'll go to Collin's Island with Chief. We can't stay here. It's going to be flood.

Tom Easter says I like to say a few words. Some of you want to stay here. Because we are born here. It is very hard for us. But we got to move.

Jacob Starr says I don't believe it yet. They say is going to flood on Reserve. Some of us like to go. In future is going to be hard. Think about your kids. God is willing to help us.

Joshua Mink says If it happen, I like to go too. If God is willing. Maybe I won't see it.

Robert Mink says Yes. They promised everything. So I think is very important. It is very hard for us. In future we got to do something.

Henry Nasecapo says Yes I like to go. It's up to Chief and Committee.

Adam George says All I can say is what I just heard. It is very good. I can't stay here.

Henry Thomas says I will follow wherever Chief and the committee goes. I just can't stay here.

Felix Thickfoot says Yes I like to go. If still alive by that time.

Geordie George says We should open the meeting by saying a prayer and pray for the future. I will wait before I move from here.

That's what these men said at the first meeting that day.

This second meeting same day, May 20th, 1961.

Opened meeting at 7:35 P.M.

Chairman Chief Donald Easter, and the Committees

Secretary Tom Mink

Started with a Prayer. 30 Residents.

Chief says Those who were not here this afternoon meeting about our new Reserve, we have to go. That's all for now. If somebody wants to say something, it is time to talk now.

Donald Pachinose says We been promised everything. We have to go. I believe our Reserve is going to flood. This is very important for us.

McLeod George says If someone wants to go and see our new town site, food is given. If someone wants to go, please let us know.

Colin Mink says We all know and see Grand Rapids, what is look like, everybody is going. Nobody can't stay here. And there's lots of Senca root out there. When we settle we'll just go outside and start digging and there will be lots of work. We will be very happy.

Charlie Starr says I can't say I go. I don't want to leave my reserve no matter what going to happen. I'm going to die here.

Pat Umpherville says I can't say much. I have to walk behind.

Henry William Thomas says Committees are not here. I can't say much. I have to go too. I can't stay here alone.

Christina Starr says I'm not going. I'm going home where I was born. I'm going to stay with my brother at Shoal River. That's all I want to say.

Albert Thomas says I'm thinking the same way I'll go. I can't stay here alone. That's all I want to say.

Chemawawin Band The Meeting of Decision. 140 people present

2 o'clock, Meeting open. June 3rd, 1961.

Chairman Walter Hart, Chief Donald Easter and the Committee, Wilson Easter, McLeod George, Henry William Thomas.

Secretary, Mrs. Mink

Chairman Walter Hart open the Meeting.

Mr. Hart says few words to the people. He says, we have to take the names. So we start taking the names. There are 133 people who want to go to new site, and only one family wants to stay here at this Reserve. Here are the names.

Two persons voted to remain at the present village and signed according; namely, Geordie George and (wife) Elizabeth George.

One hundred and thirty-four persons voted to move to Site 2 (near Collins Island) and signed accordingly.

It is believed a very few people abstained from voting, and probably were opposed.

Chief Donald Easter says a few words to the people. "We have to move to the new Site. Cause we can't stay here - is going to be flooded this Reserve".

McLeod George says a few words to the people. "Yes, we have to do what our Chief says, and the Government promised it, us, everything". "So let's think it over."

Walter Hart says "I hope we will get better from the Indian Affairs, if so, we have to answer right away, or we have to wait for a letter from them."

McLeod George says "Mr. Bell was here last April. He told me that our Bishop was there at the Meeting in Winnipeg. He heard every single thing, what the Government says. "I guess you will believe this, as the Bishop won't tell lies."

So the Chairman says, closing the Meeting, "I hope we will have another Meeting soon."

End of local meeting minutes.

These people have never been promised a road to Site 2, or electricity, but the point was used this Site would permit the construction of these and the local committee adapted the idea and passed it on to the people, and in the process, the hope became a promise.

It will be noticed the top committee men at the Meeting of May 20th said to those present, in connection with the move to Site 2 - "the Government promised us everything". It is not known how precisely the recorder interpreted what was said and wrote it in English, but the probable reference was to new houses, streets, docks, wells, stores, churches, nursing station and such like. And possibly the road and ELECTRICITY was included in the very general nature of the allusion.

The local Committee men, in verbally reporting to the writer on the meeting of decision, pointed out that although the result was overwhelmingly in favour of Site 2, that many appeared reluctant to vote, as if in doing so they might seal their doom. And the fact they all did vote was the result of hard work and pressure put on by the committee. This, they said, was justified because otherwise these people would have never made up their minds and selected any site.

It was also pointed out that each person signed in his or her own handwriting and this imparted an irrovocable nature to the transaction.

The Meeting and vote was a most impressive performance, and as a result we have a peoples mandate to proceed that can never be questioned.

(Taken from notes of a meeting June 26th, 1961, H. E. Wells, Field Representative)

II. Choosing a Name:

Once the site had been selected there was the question of choosing a name.

The first names suggested in June 1961 included Collins Reserve (after Collins Island just off the community); Chemahawinville and the one that seemed to stick for a while, Nahapiwin (Cree for "seeing far").

The names were talked about for the rest of the summer and winter and finally in March 1962, the same elderly resident who had suggested Nahapiwin indicated that it was too hard to spell and suggested Cedarville instead, but there were other Cedarvilles in Manitoba the Post Office said. So Nahapiwin stayed around for a while longer.

The field representative was pressing for settling on a name. It was raised at a meeting in August 1962 but decision deferred until "next meeting".

Then in October, 1962 three names were making the rounds; Nahapiwin (seeing far), Masikeesk (cedar) and Easterville (after Chief Easter). It was agreed to make a house to house canvas and at a meeting on December 11, 1962, eighteen months after the name issue was introduced, the result of the canvassing was announced. Easterville was to be the name of their new home at Site 2.

III. The Townsite Plan

In October 1962 town planners from the Department of Municipal Affairs presented a tentative town plan for Easterville. The people were given two weeks to study the plan and suggest any revisions.

On Janualy 18, 1963 the same group of planners visited Chemahawin with a relief model of the proposed townsite. The people were expected to give their approval, but the Chief asked for another week to study the plan. The Chairman of the Forebay Committee agreed but pointed out that any delay in accepting a plan would delay our program. Here was a good example of people operating within different time frames. The administrators were anxious to get on with the job. The people needed more time.

Finally, in a resolution dated January 30, 1963 the Band Council and Local Forebay Committee (which included the Metis) formally accepted the plan with the proviso that the Reserve boundary would be changed to include all of the shoreline section of Easterville. This condition was not accepted by the Forebay Committee and the Band ultimately was reconciled to the unappropriateness of the condition.

The land question at Easterville is still in the process of being settled.

5. SOCIAL CONSEQUENCES OF RELOCATION*

Generally the effects of the Relocation of the Chemahowin people has been expressed in terms of economics. However, the disruption of the community was evident in more than the economic aspects of social life. Disruptions are also evident in the spheres of community leadership patterns; the occurrence of socially disruptive behavior; the increase of the use and abuse of alcohol; and related problems.

It is evident from the study conducted by Keeper (1963:9) at Chemuhowan that the source of most of the leadership, at least in the economic sphere of the community activity, was the free trader. It was his ability in terms of the organization of labour and the marketing of produce, as well as his control of the commodities available from the "outside" which enabled the community to provide for most of it's needs. The Chief at Chemuhowin, Mr. Donald Easter, for whom the new community was named, worked closely with the free trader in the organization and the maintenance of the community as a whole. Being the "economic pivot" of the community, the free trader was in an ideal position to exert a great deal of influence on behavior patterns within the community (Barnouw 1950: 44-49).

Since the relocation, this source of strong community leadership is no longer available to the residents of Easterville. The free trader is no longer resident in the community. At Easterville, none of the Euro-Canadians have taken up such a position of authority, this type of behavior not in the terms of reference of the employment roles these people occupy. Further, the office of chief has shifted from the former chief, Donald Easter, to Mr. Walter Mink. This action followed closely the actual relocation of the community, indicating a shift in power and authority within the community. Mr. Mink was successful in the election against one of Chief Easter's sons. This rejection of both the free trader, and the power structure of the Easters, indicates a dissatisfaction with the old regime, and a search for a new.

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* Landa, Michael J. The Industrialization and Modernization of a Manitoba Native Community: A Case Study in Co-operation; University of Manitoba, Unpublished Thesis, 1969: pages 47-54, 91-92

At present, community affairs reveals a tripartite factionalization along kinship lines. The three main factions were represented in the band elections -- those of the Easters, the Minks, and the Georges. In addition, on many issues, the community factionalizes along age lines, such as in the question of the banning of liquor on the reserve. The older people favour this, the younger oppose it. The tripartive factionalization is manifested to an extent in the demography of the community, where there is a marked tendency for certain extended families to group their dwellings. This tendency is observably true for the patrilines; the Mink, George, and Easter homes seem to group.

In the election for the office of chief shortly after the relocation, representatives of all three factions contested the ballot, and finished with less than 10 votes separating them. While the election was won by Chief Mink, the second place candidate was Riley Easter, son of Donald Easter. This close finish illustrates that although the Easter group has lost power, they are still a major force within the community. In addition, the successful candidate was accused of using unfair tactics in influencing voters, thus securing his election. However, Chief Mink's mandate has been confirmed as recently as October of 1968, indicating his maintenance of a firm power base. (The Georges assumed dominant leadership with the election of Gordon George as chief in 1970, F.H.C.)

In addition to a crisis in leadership, the relocation of the Cedar Lake people has, from all appearances, and from the evaluations of local informants, given rise to increases in the occurrence and intensity of socially disruptive behavior. This behavior is evident in the following forms; alcoholism, family and marriage breakdown, petty crime and juvenile delinquency, and hostile expressions of overt aggression between community members. These problems do not exist independent of one another, and most cases show a strong correlation of two or more of the problems in each case.

My Easterville informants generally agree that alcohol, whatever it's roots in the community, has become an increasingly disruptive influence since the relocation. They see it as an important problem in the new community, yet do not know how to best tackle the problem.

Access to sources of alcohol is much freer in Easterville than was the case at Chemuhowan. Where the nearest outlet previous to the relocation was an estimated 7 hour boat trip upriver to The Pas, the source for the Easterville residents is a 90 minute automobile trip to Grand Rapids. As well, cash is much freer in Easterville than was the case in Chemuhowin, as the community has shifted from a credit economy to a cash economy.

The majority of the accidental deaths that have occurred in the community since the relocation can at least indirectly, be attributed to the misuse of alcohol or alcohol substitutes. It is not likely that the increased use of alcohol has resulted solely from the increased access due to the relocation, but it is likely that the relocation has intensified some of the basic causes of alcoholism. Barnouw (1967:329 and 1950:15) implies that alcoholism and the behavior patterns associated with alcohol are related to the essential atomism of northern Algonkians, and the Ojibwa in particular. Balikçi (1968:191) defines atomism as:

> "The general weakness of formal organic bonds between individuals or subgroups in the kinship, economic, political or religious fields."

Balikçi indicates that such atomism may derive from:

> "The disappearance of such formal structures as the moiety system and traditional military, economic, and religious leadership; various patterned dyadic relationships and collaboration in subsistence activities; the introduction of individualistic acquisitive techniques; the instability of the family; the weakness of the intrusive political organization established from above."

Balikçi offers that this social atomism:

> "Leads to the relative isolation of the individual or the family."

and forms the basis for the development of forms of "negative behavioral complexes" such as were observed by Balikçi at Old Crow among the Vunta kutchin, and myself at Easterville among the Swampy Cree. This type of complex has also been observed by Barnouw (1950:15, 19-20) among the Ojibwa of northern Minnesota.

We may conclude then, that alcoholism is not a cultural tendency of Algonkians, but atomism is. To the extent we can attribute the use of alcohol to the tensions of this atomism, and to the extent we can say that the community disruption of the relocation increased these tensions, it is likely that the use of alcohol in the community has increased accordingly.

While the socially disruptive behavior referred to here cannot be attributed directly to the relocation of the community, the evidence of local testimony indicates that the occurrence of such behavior has increased considerably since the relocation. If indeed, as Legassé has suggested, that this type of behavior is a response to stress, then it is reasonable to attribute much of the maladaptive or dysfunctional behavior evident in Easterville to the stresses brought about by the social and physical dislocation experienced by the Cedar Lake people in the source of their relocation.

It is also evident from the data presented in this thesis (supra: 49 - 52) that the relocation of the community from Chemuhowin has, to a high degree, intensified the general atomistic tendency evident among the people. Balikçi (1968:191) attributes the appearance of atomism to, among other things, the breakdown of kinship structures, leadership, and family stability; the introduction of individualistic acquisitive techniques; and the weakness of the intrusive political order. Noteworthy in the Easterville situation is the increased use of alcohol; concommitant problems such as displays of overt intra-community aggression under the influence of alcohol; the incidents of child neglect; the breakdown of family cohesion; and the rise of juvenile delinquency and vandalism. All of this socially maladaptive behavior is perceived by the residents of Easterville as a function of their relocation from Chemuhowin. Whether or not the incidence of this type of behavior in fact increased since the relocation is not determinable, since no comparative data for the pre-relocation condition exists. What is significant in this case is that the residents of Easterville perceive such behavior as a result of the relocation.

The people of Easterville feel that they were generally poorly prepared for the relocation, and the concommitant disruption in the continuity of their social relationships; economic base; world view; and ecological setting. Although a great deal of effort was expended by the agents involved in the relocation, it is evident that there was far too little time expended in educating the people as to the effects of the relocation on their daily lives; and probably minimal understanding of these potential effects on the part of the agents conducting the relocation and causing drastic ecological imbalances through the flooding of the lake in question. Naturally, this minimal understanding on behalf of the agents of change, became minimal understanding on the part of the community's membership.

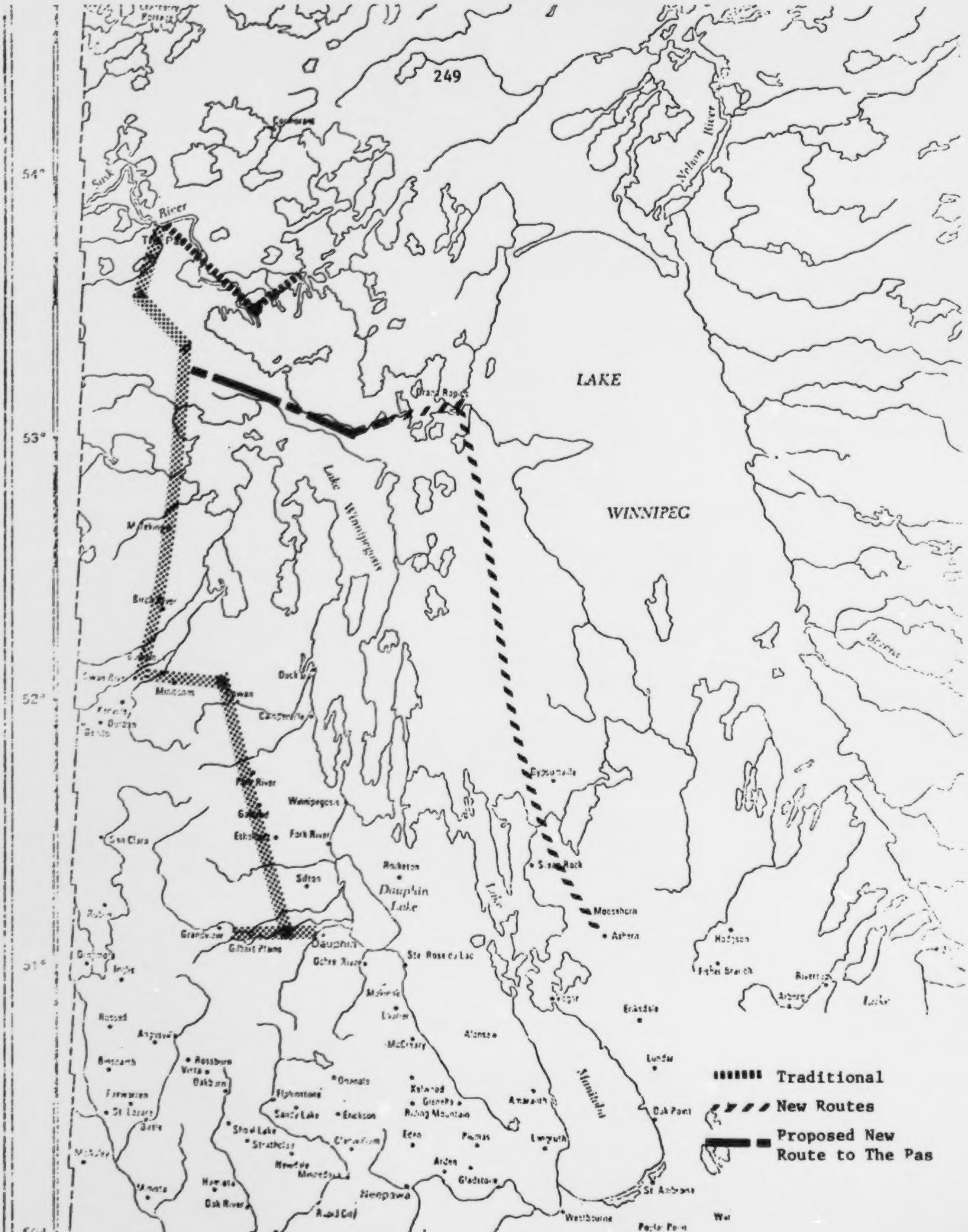
As well, the choice of the location of the new community was a poor one. The people of Easterville claim that they were not given a free hand in the choice, and that to the contrary, undue pressure was exerted on them to choose the present site. The relocation of the community from Chemuhowin to Easterville may be termed unsuccessful to the extent that it did not fulfill the functions it was intended to fulfill. An economically viable community at Easterville was not established. To the contrary, it is evident that unless immediate alternative sources of employment are made available in the community, there is little prospect for the maintenance of the community even at the pre-relocation standards.

Another socially significant change relates to the change in the traditional pattern of transportation and communication between Chemahawin and the outside and Easterville and its outside.

Chemahawin's traditional contact was practically confined to the Saskatchewan water route to The Pas and Moose Lake. Naturally the familiarity that developed over the years was a source of security, psychologically.

With the move to Easterville, and a road to town, the transportation-communication link was with Grand Rapids for some purposes and with the South for other purposes, eg., to Ashern for hospital services. However, the new community had to continue to relate to The Pas for administrative services eg., Indian Affairs and Northern Affairs. The Pas was now relatively remote. New patterns of relationships had to be developed and the process by and large had a disintegrating social effect.

This may explain why the people of Easterville greated with such enthusiasm a work activity project which cleared the right of way for a link to The Pas via a road connection with Highway #10. (See Map I)


54°
53°
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Sask River
The Pas
Grand Rapids
LAKE
WINNIPEG
Lake Winnipegosis
Nelson River
Berens
Mafeking
Birch River
Swan River
Minitonas
Bowsman
Benito
Duck Bay
Camperville
Pine River
Garland
Ethelbert
Fork River
Winnipegosis
San Clara
Sifton
Dauphin Lake
Roblin
Grandview
Gilbert Plains
Dauphin
Ochre River
Ste. Rose du Lac
Gypsumville
Steep Rock
Moosehorn
Ashern
Lake Manitoba
Hodgson
Fisher Branch
Riverton
Arborg
Lake
Russell
Binscarth
Rossburn
Oakburn
Elphinstone
Sandy Lake
Erickson
Onanole
Kelwood
Riding Mountain
Amaranth
Langruth
Alonsa
Eriksdale
Lundar
Oak Point
Neepawa
Gladstone
St. Ambroise
Westbourne
Portage la Prairie
Minnedosa
Rapid City
Oak River
Hamiota
Rivers & C.F.B.
Virden
Douglas
Sidney
Austin
MacGregor
Traditional
New Routes
Proposed New Route to The Pas

6. CONCLUSIONS

MATTHIASSON*[1]

The relocation of the people of Chemahawin might have been successful. Our data suggest strongly that it has not been. Two fairly obviouc tactics may have created very different results.

1. No attempt was made on the part of those government officials charged with the relocation to understand the internal social structure of the Chemuhowin community, and its relations with the Metis population. A thorough study should have been conducted on the socio-political organization of the community. This might have at least ensured that all segments of the community were involved in the selection of a new site. More importantly, it would have assisted in the establishment of a new structure which was built on the old. The concern seems to have been with the external environment and economics, rather than the preservation of a viable internal social environment. There was a total, although probably unintentional, ignoring of the history of Indian reactions to what Indians have sadly learned to be their role in governmental decisions concerning their fate.

2. There should have been a well-planned, and extensive training programme in the ideology of the cooperative movement before the move, and in the operation of a consumer and

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[1] Matthiasson, John S. Forced Relocation: An Evaluation Case Study. An unpublished paper. Undated pages 16-17.

producer cooperative. In the absence of such a programme, the people transferred to the new cooperative a set of expectations and attitudes which had been formed during twenty years of dependency on a free trader. When these expectations were not met, frustration and bitterness were the inevitable result.

This paper has only begun to examine the factors involved in the relocation of the people of Chemuhowin. The writer hopes to provide a fuller anlaysis in a journal article in preparation. The only conclusion that can tentatively be put forward here is that if relocations are to be attempted - and in the future they will undoubtedly become more common - the first step must be a thorough study of the internal structure of the community to be moved. Conscious involvement of the people in the planning and execution of the move must be maximized. Finally, the people being relocated must be aware of all of the implications of the new environment - both internal and external - to which they are being relocated.

JACOBSON* [2]

While an engineer can calculate the cost of delaying the dam construction for a year, it is difficult to estimate the possible gains available if more time had been given for social adjustment. We define social gains as those which allow for better adjustment to a changed situation and reduce potential welfare costs. The following list suggests prerequisites to a resettlement which may be accomplished in twelve-to-eighteen months. In the case of Easterville, these prequisites to a move were either left undone or were done inadequately. We are assuming that they could have been accomplished in our extra period of grace and would have resulted in substantial social gains:

Major Prerequisites to a Social Move

comprehensive understanding of existing social structure
full program of information to those involved in the move
complete analysis of alternative solutions prior to the move
economic forecasts based on various assumptions concerning the new sites under consideration
adequate legal review of the entire process
training of competent workers to assist in adjustment process and design of social institutions to compensate for those altered by relocation or required by future demands of life on the new site

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[2] Jacobson, Solomon, G., Social Adjustment to a Public Power Project: An Analysis of the Resettlement of the Chemahawin Bands. Unpublished Federal Provincial Co-ordinator Committee on Indian and Metis Affairs, P. 4, Winnipeg, November 1966.

II Ethnic Group Land Rights in the Modern State: Three Case Studies

Robert C. Euler and Henry F. Dobyns*

All over the world, conflicts of interest arise in modern states between government agencies charged with constructing large public works and citizens whose occupancy of the lands involved would be altered. Such conflicts are compounded when the land in dispute is held by a special ethnic enclave enjoying unique legal status — Indians on reservations in the United States, *ejidos* in Mexico, or *comunidades indigenas* in Perú, aborgines in Australia, Maori in New Zealand, "scheduled castes" in India, etc.

In industrialized and "underdeveloped" nations alike, a characteristic large public works project that brings government entities into conflict with citizens is the hydroelectric power generation complex. Such projects have recently served to define a somewhat variable United States policy toward special ethnic group land status.[1] This paper summarizes pertinent evidence from hydroelectric projects undertaken by the state power authorities of New York and Arizona and the federal Bureau of Reclamation requiring lands within the reservations of the Tuscarora, Hualapai and Navajo Indians. In each instance, a sociopolitically dominant group, placing a high value upon energy production, changed the legal status of lands held by members of a subordinate indigenous sub-society which did not share the Western civilization value position.

Pertinent legal responsibilities have been discussed recently by a competent attorney[2] and concern us less than the methods used by government to negotiate with Indians, for methods readily expose the intentions of government when treating with its constituent groups. This operational definition of policy is the basic issue, whether the governmental entity be the federal or state and the group any recognized Indian community. For Indians live on lands with a special legal status originally designed to preserve for them some special rights within the national structure and one which now provides them (accidentally or intentionally) with a geographic base for the social and cultural unity and identification which the majority of them desire.[3] More specifically, in terms of power-generating projects, the provision of the Federal Power Act, as Lazarus has concluded,

> . . . does not make any appreciable dent in the traditional rights of Indian tribes to the continued peaceful use and enjoyment of their property.[4]

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[1] William H. Evan, "Conflict and the Emergence of Norms: The 'Springdale' Case," *Human Organization*, XIX, No. 4 (1961), 172-173 outlines the process in a much smaller sphere.

[2] Arthur Lazarus, Jr., "Indian Rights Under the Federal Power Act," *Federal Bar Journal*, XX, No. 3 (1960), 217-222.

[3] Oliver La Farge, "The Enduring Indian," *Scientific American*, CCII, No. 2 (1960) 37-45.

[4] Lazarus, *op. cit.*, 222.

While the desired end results of governmental intervention on the Tuscarora, Navajo and Hualapai reservations were the same, the inter-cultural dynamics differed considerably between the first and latter two. In negotiations for federal construction of the Glen Canyon Project on the Navajo Reservation and state construction of the Bridge Canyon Project on the Hualapai Reservation, the governmental agencies concerned observed their ethical responsibilities to the subordinate groups involved. The Bridge Canyon Case, which we shall detail, provides us with one of those rare opportunities in cross-cultural relations where administrators have adhered to sound social science principles. Bridge Canyon, therefore, is a worthy blueprint for other projects and deserves close attention.

The Tuscarora Proposals

As part of a hydroelectric project for utilizing the power of Niagara Falls, the Power Authority of the State of New York decided, in 1958, to utilize as a storage reservoir approximately one-fifth of the Tuscarora reservation, 1,383 acres. These and subsequent proceedings have been well documented[5] and we shall but review them here. The New York Power Authority originally offered to purchase the tract it desired for a rather appreciable sum. The Tuscaroras turned down the offer firmly. The Tuscarora reservation not only provided most of these Indians with a home where they could live without paying rent to anyone, and a community center, but also with a symbol of special Tuscarora status within New York and the United States.

The Tuscaroras had been militarily defeated by British troops and settlers during the 1700's when they lived within what became the state of North Carolina. Late in that century the surviving Tuscaroras migrated to New York, finding refuge among Indians of the Iroquoian Five Nations. Selling such lands as they still retained in the south, the Tuscaroras purchased their present reservation lands in New York. Although they went through the legal forms of Western civilization of a "sale" in the south and a "purchase" in the north, the Tuscaroras apparently defined these real estate transactions as an *exchange of lands*. They transferred to their new land base the sentiments and beliefs with which they had regarded their former homeland.[6] The New York State Power Authority purchase offer appeared to the Tuscaroras not so much as an offer to buy some land, but as a threat to their very existence as a community with special status and identity secured by land enjoying a rather unique legal status.

Next, the New York State Power Authority assumed that the Tuscarora lands were essentially similar to other lands within that state in being subject to the right of eminent domain. When the Tuscaroras refused to sell, the Authority first threatened to bring and then did bring condemnation proceedings in the state courts. This was an effort to have the lands transferred to the Authority by judicial action and the Indians recompensed fairly at a rate fixed by the court. The Tuscaroras hired an attorney to defend them, basing their defense in part upon the principle that it would be impossible to recompense them fairly in cash. These Indians did, however, agree to cede to the Authority the lands it desired if the Authority would cede in exchange an equal area of land of equivalent quality in the [illegible] special legal status. The Authority disclaimed power [illegible] do so.

According to the Indian view, the inalienable status of the Tuscarora reservation had been sealed by a series of solemn treaties between the British Crown Colony of New York and its successor state, and the federal government of the United States on the one hand, and the Tuscaroras and League of the Iroquois on the other. The Indians argued that New York State could not exercise any right of eminent domain such as it held over nonreserved privately owned lands because to do so would violate a sacred legal and moral contract between state, nation, and tribe. Last year, however, the United States Supreme Court ruled against this position.[7]

The Land Exchange Solution

The Navajo Tribe, in negotiating with the United States Bureau of Reclamation, agreed to a land-exchange solution in the problem of erecting Glen Canyon Dam and the construction and maintenance townsite within the boundaries of their reservation. The natural topography of the great gorge of the upper Colorado River and the composition of the confining rock formations limit the number of sites suitable for dams and reservoirs. Glen Canyon, one of the few suitable sites, happened to be on Navajo land. The Tribal Council agreed to exchange the dam site and townsite, a total of 53,000 acres, for an *equal* area of federal land.[8] In addition, the tribe also demanded and received a right to develop recreational facilities along certain sections of the southern shores of the future reservoir (the National Park Service will construct similar facilities on federally owned shorelines), and preferential hiring of Navajo workmen during dam construction insofar as qualified Navajos were available. With this agreement, construction of the dam and plans for recreational development are proceeding rapidly.

The Benefit-Sharing Solution

Another of the few suitable dam sites on the lower Colorado River lies near Bridge Canyon, where the south side of the river forms part of the Hualapai Indian Reservation. The access road to the site must cross, and the construction townsite will be situated upon, tribal lands. The Arizona Power Authority, a petitioner to the Federal Power Commission to build this power dam, on August 30, 1960, signed a contract with the Hualapai Tribal Council establishing the conditions under which the tribe consented to this construction.[9] Under the terms of this agreement, the tribe has granted certain easements and rights for the proposed dam, equipment, transmission lines, access roads, townsites and railhead. These are to be located and maintained in such manner as to cause a minimum of interference with the use of the lands by the Indians living upon this 997,000 acre reservation. The tribe is to have the right to continue to use the affected lands insofar as their use does not interfere with construction activities; is to be recompensed for the value of standing timber removed; is to have the right to use any and all roads constructed by the Authority; and, in general, is to have the right to approve locations of construction camps, townsites, and storage areas.

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[5] Edmund Wilson, "Apologies to the Iroquois," *The New Yorker* (Oct. 17, 24, 31, Nov. 7, 1959).

[6] Edward H. Spicer, "Worlds Apart—Cultural Differences in the Modern Southwest," *Arizona Quarterly*, XIII, No. 3 (1957), 197-220, eloquently defines these sentiments and beliefs in another cultural area.

[7] Lazarus, *op. cit.*, 219.

[8] Public Law 85-868, 85th Congress, S. 3754, Sept. 2, 1958.

In exchange for its easements within the reservation, the Authority has agreed to compensate the tribe in amounts up to $1,551,000 before power is even generated at the proposed dam. When delivery of power from the project is initiated, a monthly payment (not less than $16,000) shall be made, calculated upon the installed capacity of the generators. In addition, the tribe will receive rental for land used by the Authority and will have the option to purchase up to 12,000,000 kilowatt-hours of power annually from the project. Two additional benefits, both having to do with prospective recreational use of the future reservoir area make this contract unique.

> 1) The Authority shall make additional annual payments to the tribe to enable it to establish and administer a fund to provide for the development of the recreational resources of the reservation *and such other purposes as it may determine.* The initial payment shall be . . . $10,000, such payment to be made concurrently with the award of the first construction contract. The annual payment shall be increased . . . $10,000 each succeeding year . . . until the annual payment reaches the sum of . . . $50,000. Beginning with the fifth year, the sum . . . shall be paid annually during the remaining life of the agreement.[10]
> 2) The Authority, recognizing the importance of the potential recreational resources of the Project to the Tribe, . . . agrees to . . . construct a road down Peach Springs Canyon . . . to the water surface of the reservoir in the vicinity of Diamond Creek.[11]

This road, some twenty miles in length, will provide the only access to the reservoir. The road will meet State Highway Department standards for secondary roads, and its cost has been estimated at $2,000,000. The Authority, in response to the Tribe's request, also has agreed to name the proposed dam, "Hualapai Dam."

This is an amazing document in terms of inter-ethnic agreements. What makes it even more so is the history of the rather disastrous Hualapai-Anglo-American relationship over the past century.[12]

Conditions of Hualapai Acculturation

The Hualapai Indians have been extremely suspicious of Anglo-Americans as a result of their military conquest by the United States Army in 1869 and the harsh treatment they received in the contact situation from that date nearly to this. They were forcibly removed from their ancestral homeland in 1874-75 to a low-altitude Colorado River flood plain. Unsuccessful at riverine agriculture, they depended upon government rations for their subsistence. Returning to part of their former territory, they found their springs and hunting and gathering lands usurped by Anglo cattlemen.[13] By 1889 their response to stress on a group basis involved large scale acceptance of the Ghost Dance then sweeping western tribes.[14] This "traumatic" reaction to Anglo-American conquest is traceable to Hualapai attachments to and emotional dependence on their lands. Domination also brought forced adjustments and changes in social activities, beliefs, habits, and subsistence.

Anglo-American prejudice ran high at this period. Contemporary newspaper accounts indicate its nature. When the Hualapai suffered discomfort from unaccustomed Anglo foods, such as milled flour in 1887, a local newspaper editorialized:

> A plentiful supply of arsenic mixed with it would disguise the bitter taste. We offer this suggestion to the contractor and sincerely hope he will adopt it.[15]

Two years later, when settlers were alarmed by the Ghost Dancing, the same newspaper reported:

> It is evident that the "medicine men" have stirred up all the supersititions of which a savage is capable, and if the ways of God are mysterious, the ways of a live Indian are more so.
>
> Music hath charms to sooth the savage breast—
> And it is said that the most effective is the whistle of a well-directed bullet.[16]

For the next forty years the Hualapai lived a life of subservience to such-minded Anglo-Americans, a situation that began to change perceptibly only after local implementation of provisions of the Indian Reorganization Act of June 18, 1934.

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[9] Agreement, Bridge Canyon Development, By and Between the Hualapai Indians and the Arizona Power Authority, Aug. 29, 1960.

[10] *Ibid.*, p. 12. Emphasis added.

[11] *Ibid.*, p. 16.

[12] Henry F. Dobyns and Robert C. Euler, "A Brief History of the Northeastern Pai," *Plateau*, XXXII, No. 3 (1960), 49-57.

[13] *Ibid.*, 55.

[14] Henry F. Dobyns and Robert C. Euler, *The Ghost Dance Among the Pai of Northwestern Arizona*, (MSS).

[15] Kingman, A. T., *Mohave County Miner*, Oct. 8, 1887, p. 3.

[16] *Mohave County Miner*, Sept. 7, 1389.

Dynamics of Recent Contact

Since 1950, the Hualapai have enjoyed amicable working relationships with at least two types of Anglo-Americans, attorneys and anthropologists. The general counsel for the tribe, Royal D. Marks of Phoenix, has served these Indians for more than a decade in a non-paternalistic fashion. He advises the Tribal Council on matters requiring legal assistance and keeps its members informed of proposed legislation, on all governmental levels, which involves Indian affairs. In all instances, after presenting data for the council's consideration, he has refrained from suggesting decisions unless specifically requested. His participation certainly is in accord with the best precepts of productive cross-cultural relationships and his rapport with the Indians is excellent.

Extensive contacts between the tribe and anthropologists (the authors) began during scientific research in connection with tribal land claims. One tribal councilman, suspicious of "strange white men," even attempted forcefully to eject the senior author from the reservation on first meeting him at a tribally approved excavation in 1953. Yet in 1958 the Hualapai Tribal Council requested this same person to serve as the first official Consulting Anthropologist to the tribe, after completion of intensive research, accompanied by explanations and demonstrations to leaders and other tribesmen of ways in which anthropologists could play a part in avoiding head-on "cultural collisions" between the Indians and the Anglo-Americans who came to negotiate with them. This relationship continues and recently has involved preparatory archaeological salvage projects in the Bridge Canyon area.

Thus the attorney and anthropologists were able to convey, right from the start of negotiations, both Western legal *and* Hualapai cultural viewpoints to the Arizona Power Authority and to its dynamic and understanding executive secretary, John McGue. They were equally successful in conveying the Authority members' points of view to the Indians. We believe that the transmission of these cross-cultural data has aided rapport considerably and facilitated negotiations among all concerned.

At this writing, a shadow has been cast over these relationships. Doubt has been raised as to the position of the Arizona Power Authority in future plans for the Bridge Canyon Project by introduction into Congress of a Nevada-sponsored bill to authorize construction of a federal dam at the site. How this may affect inter-cultural contacts is not, of course, immediately known. It seems reasonable to predict, however, that the forward-looking Hualapai tribe will realize full benefits. In any event, these Indians have achieved a large measure of self-determination.

Comparisons and Conclusions

If we raise the level of our analysis now from specific cases of cultural conflict to their cultural significance, we need to take note of the fact that Western civilization apparently is driving toward uniformity of social structure and other cultural traits.[17] We have already seen that the New York State Power Authority strove to treat its relationship with the Tuscaroras in the same way that it dealt with other landholders whose lands it required. The attitude of the Authority was made very clear by the opposition of Tuscaroras according to quite different principles.

Since the political structure of the United States comprises a federal system in which constituent states retain many rights and powers while surrendering others to the central government, jurisdictional disputes can and do arise. In trying to obtain Tuscarora lands, the New York State Power Authority initiated condemnation proceedings in the state courts, but the attorney hired by the Indians succeeded in transferring the case to the federal court system, appealing all the way to the Supreme Court. This competition of governmental entities is seen also in the activities of the state power authority and a federal bureau carrying out the same kinds of actions in two Arizona projects, including the possible federal supererogation of the state at Bridge Canyon.

The data show that the attorney plays a vital role in resolving conflicts between competing entities in Western civilization when the national state operates in terms of legal rules as does the United States. As already indicated, a skilled and able attorney was retained by the Tuscaroras only after the State Power Authority of New York had firmly seized the initiative in their dispute. Navajo tribal officials, on the other hand, had the advice and aid of their general counsel, Norman D. Littel, in negotiating with the Bureau of Reclamation, while legal negotiations between the Hualapai Tribal Council and the Arizona Power Authority were largely handled by the tribal general counsel, Royal D. Marks.

No anthropologist was on the Tuscarora scene to further the cause of inter-cultural understanding there as in the Hualapai case. While the Bureau of Reclamation employs no anthropologists, the Navajo Tribe does (in connection with litigation before a special tribunal) and their advice was presumably available both to tribal officers and attorneys in presenting the Navajo view to representatives of the government. Of the three cases analyzed here, the Tuscarora case certainly was the least productive and the most fraught with misunderstanding as far as human relations are concerned.

The next point to be made is that the behavior of the various individuals and groups involved in these decision-making processes resulted from their cultural values and basic postulates. Some years ago, Julian H. Steward, in recounting the history of Indian defense organizations in the United States, advanced the explanation that such groups arose only as cities developed urban classes not directly in conflict with Indians over land and other natural resources.[18] This appears to be a reasonable historical reconstruction until examined in the light of evidence from just such cases as we have before us. Two of the attorneys involved live in the national capital with about 1,000,000 residents; the third lives in the Arizona state capital with almost half a million population. They all fulfill the definition of being urban dwellers. So, perhaps does the consulting anthropologist who lives in a small college town of 25,000, but what about the head of the New York State Power Authority? He lives in the largest metropolis in the country, so perhaps we can rule out simple urbanization as a sufficient cause for sympathy for Indian subordinate groups. With regard to resources, certainly the New York Power Authority was competing with Tuscaroras for them, but so were the Arizona Power Authority and the Bureau of Reclamation competing with Hualapais and Navajos for them. Members of these bodies are also urbanites, living in Washington and Phoenix respectively.

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[17] This section is adapted from Henry F. Dobyns, "El Análisis de la Civilización Occidental por Métodos Antropológicos," Lima Peru (MSS).

An explanation of the two different outcomes in the cases analyzed must be sought in the cultural values held by the individuals setting government policy. These values constitute intervening variables that destroy the apparent relationship between urban residence and non-economic involvement in Indian lands, and a moral commitment to aid distressed Indians.

Furthermore these three instances of inter-ethnic relations, involving, as they do, different solutions to the problem of land control and use for technological progress and public welfare, show that modern Western civilization is characterized by a wide range of cultural values differentially distributed in the population so as to be potentially conflicting in decision-making situations. In other words, modern Western civilization is characterized by a dynamic tendency toward cultural diversity. The drive toward cultural uniformity mentioned above, and that toward diversity just identified, are opposing tendencies clarified by just such conflicts as we have analyzed. These tendencies appear to arise from a *de facto* diversity of cultural values held by human beings making up Western society, and who, at a deeper psychological level, hold their basic cultural postulates to be no more than alternatives.

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[18] Julian H. Steward, "The Changing American Indian," in Ralph Linton (ed) *The Science of Man in the World Crisis*, Columbia University Press, New York, 1945, p. 287.

III ADMINISTRATIVE PROBLEMS OF THE RESETTLEMENT OF TEMA

By

Peter Du Sautoy
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The first official meeting to discuss the problem of the resettlement of the population of the existing fishing village at Tema, which was necessitated by the proposals for a new port at Tema, was held in June, 1952. The last meeting held in order to decide whether the special resettlement exercise was now over and whether the old Tema population could now be regarded as ordinary members of the new township, was held in 1960. At the height of the resettlement exercise, documents relating to it were regularly circulated to no fewer than 36 Government offices, which had an interest in the problem.

The problem of resettlement can therefore be seen as principally one of the co-ordination of all the organisations involved, but it is also an interesting illustration of the principle that, in matters of planning, human beings rarely fall in entirely with the wishes of the planners.

At the first meeting of Government departments held to discuss the exercise, it was rightly decided that no administrative decisions should be taken until some idea was available of the number of persons and households likely to be involved in the move. It was clear that the construction of the harbour would not permit the existing inhabitants to remain where they were, and that it would also seriously interfere with the livelihood of those of the population who were engaged in fishing. Accordingly a joint survey was carried out in August 1952 by the Office of the Government statistician and the Department of Social Welfare and Community Development into the number of households at the old Tema village. The survey showed a total of 408 compound houses and a population of resident Tema natives of 2,906. There was, however, reason to believe that this figure should be increased to 4,011 to cater for a number of persons not actually resident at the time of the survey but whose family and whose base was in Tema.

At the same period it was decided that it would be also necessary to move the inhabitants of the village of Sakumono to make way for road and railway construction. A further survey was undertaken and it was discovered that Sakumono had 54 compounds and 327 persons. By reason of its size, Sakumono presented less of a problem than Tema, but it had to be moved more urgently. A new site was allocated to the village and the intention was that, by being given the materials for new houses and technical assistance in the building, they would construct their own houses by self-help on the new site. This did not in fact happen, most of the work being done by the Government Department of Housing. This shows one of the first lessons to be learned from any resettlement exercise, namely that one cannot rely upon the people being resettled to do much for themselves. If the move had been at the people's own wish, they would probably have seized the chance of receiving assistance to build improved houses; because they were obliged to move by outside authority, they felt that it was entirely up to the authority which ordained the move to provide everything necessary for it. This is a natural psychological attitude, but it is one which inevitably produces further complications for the planners and was to be found latent in the people's minds throughout the period of the resettlement exercise.

It was felt in the case of Tema that dealings with the people would be much simpler if contacts with them were maintained by persons whom they knew and in whom they had confidence. If Government officials who were complete strangers were sent to deal with the people of Tema just before the move, suspicion of the strangers would be added to any possible resentment against their advice and they would have a much harder task. Accordingly mass education staff of the Department of Social Welfare and Community Development were sent in 1953 to the existing Tema village to work among the people and to get to know them. They were instructed to undertake their normal adult educational work and not to discuss the resettlement exercise until directed to do so. It was hoped that, like yams once planted, they would bear fruit at a later stage, and by having gained the people's confidence through their ordinary work they would be better able to assist them and advise them in the distasteful business of moving. This foresight paid dividends when the move eventually came, since the mass education staff did have a great deal of knowledge of the people and their problems and were able to act as an effective link between them and the Government.

In 1954 the Tema Canoes moved to a new fishing beach, being given cash compensation for this, and the terms on which the people themselves would be resettled were reduced to writing in pamphlet form. The pamphlet was issued in 1955 and those who occupied houses in the old village in August, 1952 were offered accommodation in the new village. Farming land would also be offered rent free on a 75 year lease in a new area. In 1955 the Government agreed to offer Tema householders plots for houses on a new site as free holds. However, there was a hitch in effecting the resettlement, in that political difficulties in Tema and a dispute over compensation for the stool lands raised such feelings that it was deemed advisable not to conduct an all-out campaign just at that time to persuade the people of the need for the move but to confine mass education staff in the area, for the present, to its normal work. The opposition to the move continued to maintain itself until 1959.

While all this discussion was going on the population of Tema village had grown considerably over the 1952 figure until there were about 7,000 people in 1957, making the original estimate of accommodation to be built quite inadequate. However, the Government maintained the view that only those who were in Tema at the time of the original survey had a right to housing in the new village but arrangements would be made for the surplus to have plots elsewhere where they could build for themselves. Planning for the move was begun in April 1958, but it was not until November 1958 that the detailed programming of the move, which was scheduled to take place in January 1959 began. It was then decided that a team consisting of an Administrative Officer, a Police Officer, an Army Officer (in the end, the Army were not in fact involved) and an Officer of the Department of Social Welfare and Community Development should deal with the move, which was intended to be conducted like a military operation. The Department of Social Welfare and Community Development decided upon a preparatory campaign to prepare the people for the move and ten male and four female Mass Education Assistants under a Welfare Officer were immediately sent to Tema to start work. The basic problems were seen to be the following:-

(i) removal of the occupants of the houses which existed in 1952 to the houses in the new village, and

(ii) removal of the "newcomers", including those in shacks and unauthorized buildings, to a new site elsewhere.

By this time the population was estimated at 10,000. The original inhabitants in 1952 were 4,000 which was estimated to have increased to 6,000 by natural increase, tenants and returned relatives. All these could be accommodated in the new village. However, the problem arose of how to deal with the "newcomers". They were in unauthorized buildings and Government had no legal obligations to rehouse them. However, it was felt that they should be given advance warning of the demolition of their houses on the old site and an indication of where they should move to. A number of new services and facilities had been promised in the new village in the 1952 pamphlet but they were behind schedule.

At this stage it was decided that the Senior Government Agent, Accra, would be in overall charge of resettlement, having an Administrative Officer stationed in Tema. Transport would be provided for the move from various Government departments and the Police would be alerted but would keep in the background. The new date fixed for the move was 1st March 1959. In December 1958, all Government departments likely to be concerned were warned of the move and the Resettlement Officer decided to hold regular meetings from then on of all persons likely to be concerned at the particular time. Minutes of the meetings were to be circulated to all Ministries and to other departments affected.

In January, however, it became necessary to issue the following press release:-

> "The re-settlement of Tema village
>
> It is reported that a rumour is circulating in Tema to the effect that the Government intends to use the Army and the Police to remove the villagers by force from their present homes to the new houses which have been built for them. There is no truth in this rumour.
>
> It is the intention of the Government to re-settle the inhabitants in the new model village as soon as practicable, but arrangements are being made so that this can be carried out peacefully and quietly, with the least possible inconvenience to the community.
>
> A resettlement office has been established in Tema and the actual planning and carrying out of the move is in the nands of a Resettlement Officer, assisted by a team of officers from the Department of Social Welfare and Community Development.
>
> As soon as the plan is ready it will be made public and the members of the team will explain details of the move to all householders, and be available for any help and guidance which may be required."

The situation was further complicated by the continuing dispute between the Mankralo and the Mantse of Tema. One faction refused to discuss the move until the case was settled.

In February 1959 it was found that the new village had a deficit of 216 rooms and that this probably could not be made up before the move, necessitating a further rearrangement of the allocation of accommodation.

Despite all the fears of those concerned the move went off to a good start. The political trouble was solved by prompt action on the part of the Government, the people moved without mishap and the old houses were demolished by a contractor. The persons in the unauthorized structures began vanishing to friends and other places as the bulldozer approached, but some were assigned to rebuild at Mile 17 from Accra. However, the move brought problems of its own in regard to hygiene. The Welfare Officer at Tema reported:-

> "2. Among the many items on the agenda discussed which directly concerned the Department was the use of modern amenities like the flush latrines and dustbins in the village. The Resettlement Officer expressed concern about the misuse of the latrines in the village. I explained our programme to educate the people about the problem and pointed out that the job is not easy and that progress is bound to be slow considering the conditions under which the villagers lived all these years; the change is revolutionary. Apart from loud speaker announcements, house to house education, we intend to introduce the use of toilet rolls by selling at cost price to the villagers in order to reduce the frequent blockages of the sewer through the use of sticks, stones, corn sticks, pieces of nets and rags. We have in fact started the scheme and at the time of writing this report we have sold about 2,000 rolls in three weeks.

3. I told the meeting, however, that the response of the Tema people to our efforts to maintain high sanitary standards is encouraging and that with little more effort on the part of the sanitary labourers as to the cleaning of the latrines there whould be no case for complaint. I would say that the standard prevailing in the village at the moment is not far below what prevails in the communal latrines in the main township, and for that matter, Accra itself. The use of the dustbins provided for the compounds, with the exception of few families, are suprisingly being properly used. I also mentioned plans to promote "house-proud" consciousness and to maintain general sanitary standards both within and immediately outside the compounds. This will be in the form of monthly competitions between the four quarters, a trophy to be awarded to the best quarter. I also hinted that plans are afoot to launch a full scale mass education programme to eliminate the frustration and hostility existing between factions and to knit more closely the village population into a community with a soul. Other matters discussed were slum development, problems of mixed families, title deeds, the housing of the extra population and the unauthorized householders which I dealt with at length and fully recorded in the minutes.

A number of minor problems connected with farming land, compensation and the like still remained in 1960, but it was felt that the people were now sufficiently integrated into the new township for a special resettlement officer to be unnecessary and that the remaining problems could be dealt with through the orthodox Government channels.

There are some important administrative lessons to be learned from this resettlement exercise. Firstly, one should never embark upon any exercise involving people without having the up-to-date basic facts about them available through social investigation. Secondly, one must never expect the human problem to remain static. If there are delays in carrying out the physical aspects of construction one must re-survey the human problem. In the case of Tema, unforseen delays in building the new accommodation meant that the population of the old village had grown in the meantime far beyond the new accommodation provided.

** Thirdly, the psychological preparation of the people for such a move needs more attention. As I have said earlier, there is a natural latent resentment against being moved compulsorily and one cannot expect any real spirit of self-help. Moreover, it is not enough merely to publish the terms of resettlement; they must be carefully explained so that they cannot be misrepresented or misunderstood by anyone, and this should be done by someone who knows the community and is known by them, such as the Mass Education Worker. Such workers should be available well before the time of announcement of the move, so that they are not primarily associated with it in the public mind.

Further, there must be a continuing link between the planners and the people, capable of interpreting each to the other and ready to explain changes in attitude or in plan as they occur. Indeed this might have gone further in Tema with more preparation of the people for the new environment in which they were to settle before they got there. Finally, the most important lessons is in the means of co-ordination employed. When an exercise deals with an overall community, nearly every Department of Government must be kept in the picture and most will be actively involved in the provision of services. These may not keep pace with each other and the whole exercise may well be delayed by a delay in the provision of one service.

Although a number of official meetings were held it was, rightly, not attempted to make these meetings into an Executive Committee. The numbers would have been too large for effective action. The meetings were used as a means of information, of mutually reporting progress, and of allocating responsibility to the particular department likely to be involved in providing a particular service. To enable on the spot co-ordination and quick decisions to be made, a Resettlement Officer, aided by a Welfare Officer, was appointed and he was the key figure in the exercise. In other words, the guiding lesson is not to leave such an exercise to be guided by a Committee but to appoint an officer with executive responsibility, aided by a small team to deal with co-ordination on the spot, holding meetings at a higher level when necessary to keep others in the picture.

The resettlement exercise took time, perhaps a longer time that it need have done, but it succeeded and the administrative pattern adopted seems a very worthwhile one to be considered for any similar exercise in the future.

IV DEVELOPMENT AND JAMES BAY:

SOCIO-ECONOMIC IMPLICATIONS OF THE HYDRO-ELECTRIC PROJECT

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BACKGROUND:

The only major feasibility studies at the time the project was announced were engineering and financial ones.

The Cree Indians feel that the area affected belongs to them. They were not consulted before the decision was taken to begin the project, and they feel that the project would destroy their livelihood and way of life, bound up as it is with hunting and the wildlife of the region. They see no middle ground between their desires, to preserve their Indianness and to develop only in directions which they themselves choose, and the project, which threatens them by its size and seeming inevitability. All they can do is to oppose it, categorically and uncompromisingly.

In the first place an assumption made by the research team is that knowledge is for use, and that decisions informed by knowledge are better than uninformed decisions. Equally, however, in a participatory democracy such as exists in Quebec and Canada, all persons affected by a decision should be involved in the making of the decision. This requires that information be available to all parties equally. Any decision-maker tends to be more influenced by "hard" information, so that we have deliberately stressed this kind of information about the effects of the project on the people of the region and about the feelings of those people so that there is some balance in the information going into the Corporation decisions. We trust that in this way social factors and local opinion will gain greater recognition in the formulation of decisions.

In particular it is our experience that maximum feedback occurs where people feel that they can influence decisions, and so we emphasize meaningful involvement in decision-making by the local people.

Put in the bluntest terms, even if there is no power project, there is likely to be a crisis in Indian society in about five years. The increase of Indian population, its changing demographic composition, its increasing demands for manufactured goods and the services associated with southern Canadian society, will be confronted by the relatively limited potential for expansion of the hunting economy.

In saying this another assumption is made, namely, that the Cree will be able to influence the pattern of development in the north, and will be able to choose in a meaningful way what is to be their own future. At the moment they appear to have no choice other than to accept, or to vainly oppose, the decisions made by the Corporation under the powers delegated to it by the National Assembly. Unless a Cree voice can make itself felt in the planning body for the region, no Cree is likely to regard development of the area as taking into account his wishes.

They oppose the project insofar as it shows them no respect, forces them to accept what they have had no chance of considering, and forces them to give up features of their life which they regard as vita. Material benefits from the project - mainly employment to date - have not been rejected so outrightly.

Recommendations, we feel, spring quite readily from our analysis. While as individuals we are capable of making recommendations we feel strongly that the people affected by the project should have the first chance to see our analysis. Undoubtedly, they have divergent interests and goals; it is in the light of those goals that they should decide what they want to do; having presented our analysis and heard what the goals are, any recommendations should then involve merely an interpretation of the findings of the analysis.

POPULATION:

In the last five years, however, a major change seems to have happened. The number of children born to all women between the ages of 20 and 45 each year has dropped to an average of 4.9 per 100, while for the year 1970 the rate dropped to 4.0 per 100. This trend, again according to Romaniuk (1972) is common to all Canadian Indians and began a little earlier elsewhere in Canada. This declining fertility rate may not be a long-term trend, but it has already begun to have an effect of school populations. The increase in the size of classes each year is becoming smaller.

The two trends of more mothers, but less children per mother are not yet in balance but they are approaching this point.

Below age 20 all persons are potentially involved in being educated though large numbers are not continuing in school even up to grade 10. This is to a large extent the traditional view of this stage of life. Young men learned hunting at this stage, but as helpers to their fathers; they were not expected to catch as much as a real hunter did. Only after marriage, when they had to provide for a household, did they become "serious hunters".

A steadily rising number of new houses - rising from around 50 per annum in 1971 to over 74 by 1980 - will be required each year, with all the other accompaniments of new homes.

The second is that schooling is going to be needed for the children of these families.

In short, the most conservative estimate possible would be that 241 additional pupils over age 10 will be at school by 1975 and 380 by 1980. This would involve 15 new teachers, and 15 new classrooms by 1975, and 22 teachers and 22 classrooms more by 1980.

EMPLOYMENT CHANGES & NEEDS:

The permanent jobs, however, lasting after construction is over, are likely to demand a much higher level of education than is currently available among the Indian population, so that if the project is to prove of lasting benefit to the Indians, immediate planning would have to start now, of how to upgrade the level of local education, so as to produce the trained Indian people needed after 1980. Although flooding of hunting territories, or reduction of salmon and char migrations might appreciably reduce the number of people employed full-time in a subsistence way of life, the number so affected is likely to be smaller than the number of jobs that could, with educational planning, be permanently available after 1980, and is likely to be very small in relation to the numbers of construction jobs available.

ECONOMY - Income-In-Kind:

But at least as important for the Indians as the cash income from furs is the income-in-kind - the subsistence income - provided by the hunting way of life. This involves meat from the animals caught, fuel from the forest, some clothing from skins of large game, and some implements and building materials (snowshoes, wood, etc.). Among Waswanipi families engaged in hunting Feit calculates that 30% of the calories in the total food budget come from moose, with about 35% coming from beaver meat. Store-bought foods provide about 20% and fish and small game animals the remainder. For Mistassini in winter 1969-70 Tanner (1972) estimates that bush foods provided 573,400 lbs. of foodstuffs, while store-bought foods provided 140,000 lbs.

During the spring and summer the sources of food supply change. In coastal areas duck and geese become of major importance. Arsenault (Ecology Report 1971) estimates that each hunter in the coastal areas shoots some 50 geese each year during the 15 week season. If his family is of five persons, and they have three geese a week this would represent between 30% and 45% of a basic diet. To this figure would have to be added an amount provided by fishing - and this could easily exceed 25% of the diet.

Totalling these varied estimates for inland groups, during the winter 90% of 80% of the population's food supply comes from the bush, with perhaps 10% of the remaining 20% of population's food supply being of bush foods; this means that 66% of the total winter food supply is from the bush. In the four summer months the corresponding figure would be 48%. Averaging over the whole year means that 60% of the total food supply of the total population comes from the bush.

N.B. To interpret the value of hunting solely as a means of subsistence and to give it a cash value would be objectionable to most Cree, as hunting is a way of life. Hunting also provides employment and a sense of dignity and independence to the hunter.

There is no question but that a majority of Indians wish to preserve their hunting way of life. They wish to preserve their Indianness while accepting technological improvements to the way of life.

EFFECTS OF FLOODING ON TRAPPING:

...the very existence of beaver during the winter is contingent on the maintenance of a very precise level of water. Hydro-electric dams are designed to maintain a constant flow of water by varying its level. Briefly stated, the beaver builds his dams with the lodge immediately behind them, so that the water level will remain constant, at a high enough level so that all entrances to the lodge are under water, but low enough so that the crown of the lodge remains dry and has air in it. He has to build the lodge during the summer and early fall months and so must have the water level established at that time, and he must be able to carry his winter food supply of soft bark-covered branches to below the water level.

At the time of spring thaw and break-up it is common for beaver to be flooded out, as the water level rises temporarily, and the lodges become uninhabitable. But this period is of short duration, and it is only one or two weeks before the water level drops to that of the dam.

In areas where the water level will be controlled by the demands of power generation it is hard to envisage anything but the extinction of the beaver.

In brief, then, beaver are likely to be driven out of all areas subject to inundation, and to persist only in the rivers above the point at which inundation occurs.

PLANNING:

The question is posed. What sort of society do Indians want for 1981? Once they have answered the question in their own way, it is hoped that this analysis of one possible model may indicate how such a society can be planned for.

It must be emphasized that although the above presentation of development prospects appears in the context of the James Bay project, the content of what has been said can apply more generally. The basic question is, "What developmental opportunities exist for the James Bay region?" In this context the active participation of the Indian population in the cash economy as it evolves, becomes a crucial issue. Future development cannot be left solely in the hands of people outside the region, for if it is there will not be development for the people of the region, nor will it be as effective development as it might be. Development must be a subject of concerted effort not only by government but also by the local population, if the economy can be expected to take a local expression rather than be a dependent appendage of the white wage economy of the south.

EDUCATION:

Education, of both children and adults, is one of the major ways in which adaptation to a new society can occur. But education which merely acted to adapt Indians to a world defined by whites would not be satisfactory;

it must be education adapting Indians to a world which they are themselves involved in defining. It must meet Indian goals, and to some extent be adapted from patterns appropriate in non-Indian situations.

The white middle class child ordinarily has no great difficulties in adapting to school, in fact all of his pre-school life has prepared him for it. School is not disruptive for him since school, socialization was already patterned by home socialization, therefore there is no enculturative discontinuity, in fact the whole school system is geared for him.

But for the Indian child raised in a fairly traditional context (as is the case for the James Bay children) school is and cannot be anything but disturbing, since his home enculturation did not prepare him at all for formal education (Tremblay et al 1967:117).

At the elementary level, day schools can reduce the trauma of this experience in that children are able to be socialized concurrently to the Indian way of life as well. They are not alienated from the traditional life of the band, and are able to maintain their kinship ties and their affective ties with their parents. The identity conflicts that prevail in residential schools occur less often since the children are able to identify with Indian adults. Also they are able to speak their own language, eat their type of food, that is, live in a way that is familiar to them. Hence, the enculturative discontinuity is not as great as in residential schools, and the extreme anxiety, alienation and psychopathological disorders that Wintrob and Sindell found prevailing in residential schools would not occur (Wintrob 1968; Wintrob and Sindell 1968, 1969; Sindell 1968, 1969; Sindell and Wintrob 1969; Hobart 1970). Their greatest merit is having children go to school while still living at home, which seems a more normal situation.

At the moment the high rate of drop-out at this level (secondary) can be explained in several ways. Most significant probably is the number of Indian children who see no relevance in continuing education beyond this point -- school subjects seem irrelevant to life as an Indian, and the sort of jobs which white children see as justifying remaining in school until the completion of high school are not regarded as jobs to which one can aspire. Immediately meaningful activities be they involvement in hunting, or wage employment, or merely visiting around, take precedence for a large number of Indian adolescents over remaining in school.

INDIAN REACTION TO THE REPORT:

The impression grew up that decisions had already been taken in secret, but that people who knew the nature of the decisions were deliberately witholding information. This impression became predominating among educated and urban Indians, and among whites knowledgeable about the North.

Despite our mandate to communicate factual knowledge of our study to Indians, and the good general knowledge that we have built up of the implications of the scheme, we have been able to satisfy few of the detailed questions that individual Indians or Indian representatives have asked us.

It should be stressed again at this point that detail is essential in any communication of information to the Cree. His own knowledge of his own area is so intense that broad generalisations that may satisfy outsiders are inadequate for an Indian. The over-general final report of the Ecology Task Force, condensed still further in the poorly-translated three page summaries in Cree, was felt by the Indians to be an insult to their intelligence and a reflection of the ignorance of white scientists. It is small wonder that it was burned at Rupert's House, when circulated there.

Distrust of any statement made by the Corporation has been consistent from the start, as could well be anticipated. All the earlier attempts of the Corporation to convey information were discounted as being attempts to "sell" through deceitful public relations.

That then is the context of the communication of our findings to the Indians of the North. Copies of working papers were sent to the two original IQA communication workers from the north, to the IQA, and to Indian students in Montreal, prior to the completion of the interim version. Immediately on completion of the interim report, copies were sent to the IQA, to the communications workers, and to all band chiefs.

The Association would prefer to stop the whole Project, and has filed its injunction to do so. On the other hand, in the light of M. Bourassa's assertion that the Project itself is not negotiable, but that the form that the Project might take is, the Association is considering how the Project might be.

As can be appreciated, there is still a huge lack of knowledge.

In short we are very aware of the continuing scarcity of factual knowledge about the Project in the North; we are also very aware that the rumours and other interpretations that are placed upon each successive move by the Corporation into the North increase the sense of impending doom among ordinary people in the North. Against this, a growing body of people is becoming able to ask appropriate questions, - not merely the IQA Executive as it used to be, but the communications workers, many chiefs, and a few of their delegate-assistants.

Our months of effort at trying to communicate its findings to the people in the north have been largely ineffective, for the process of communicating and understanding is slower than either we or the Corporation anticipated. It is an effort that must be perservered with however.

NOTES ON:

V THE USE OF SOCIAL SCIENTISTS BY THE WAR RELOCATION AUTHORITY

by

Edward H. Spicer

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When persons of Japanese ancestry were evacuated from their homes in Pacific Coast states by Army order in the spring of 1942, a civilian agency was created to meet the problems of the displaced population. This agency, the War Relocation Authority, assumed responsibility for (1) administering the 110,000 people in ten camps, called relocation centers, hastily built in western states and Arkansas and (2) planning and carrying out a program for re-establishing the evacuees in normal American communities. The activities of the War Relocation Authority in administering the group extended over four years--from March, 1942, through June, 1946.

The use of social scientists, other than economists, in government or other action programs is still not common and still in a tentative state of development.

The Community Analyst, as he was called, worked in a purely advisory capacity without responsibility for administering any part of the program. With the aid of evacuee assistants, he prepared analytical and descriptive reports on the community, which were submitted to Washington through his two superiors, the Project Chief of Community Management and the Project Director. In Washington the Head of the Section with a small staff of assistants made available to Washington staff and other projects the pertinent findings of the centre analysts and guided their work. Thus there was a trained observer working as an integral part of the staff at each relocation center and a processing unit in Washington to bring the findings from the centers to bear on over-all policy.

As a result of the influence and background of the two anthropologists. Of the twenty-two who served as analysts in Washington or in the centers during the existence of the WRA, fourteen were anthropologists and eight were sociologists.

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The center analysts worked in the manner of a field anthropologist who studies the social organization and way of life of a whole community. They interviewed a wide variety of people, both evacuees and administrative personnel, in an effort to discover the different views toward administrative actions, current and past, and the relative importance of different views in the community. They followed, through interviews, reactions to current aspects of the program and sought to find out the causes for the variety of reactions. They observed the informal life of the community as well as the activities of the formal and organized groups. They attempted to predict the reactions of the various groups in the community to contemplated actions of the administration and to assess the effects of actions already taken. Their observations were presented to the administrative officers both in written form and orally in staff meetings or in informal conversation.

THE CONTRIBUTION OF COMMUNITY ANALYSIS

The work of the Section (Community Analysis) was concentrated successively on three types of analysis: (1) the causes of friction and social disturbances in the centers, (2) the causes of the evacuees' limited acceptance of the WRA resettlement program, and (3) running analysis of reactions to the program as reflected in relocation center life.

In proposing Community Analysis as an aid to the center administrators, the Director coined the phrase "the trouble pattern" and said that he thought Community Analysts could help in heading off trouble by analyzing the conditions that led to it.

Specifically, the Community Analyst pointed out causes of the unrest by relating present conditions in the centers to what had recently happened to the evacuated people.

The role of Community Analysis in the agency's resettlement problem was that of helping in the formulation of a basic approach and in the definition and re-definition of the human attitudes on which the program was impinging.

Typical Behavior Patterns: WRA and Evacuee

WRA's typical behavior pattern is to arrive at its own solution as to what is best for the people, to implement that solution with opportunities which it feels are adequate, and by high pressure salesmanship to persuade the people to take advantage of these opportunities. The typical evacuee's reaction to this approach is first to distrust a cut and dried solution in the development of which they have not participated and to try to find the "bug" in the program feeling sure that there is a "bug" in it.

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The very speed with which a program of resettlement is carried on such as recruiting for various industries is translated in the evacuee's mind into pressure, and pressure is translated into loss of self-determination, and loss of self-determination leads to resentment, and resentment results in emotional blocking and inaction or immobilization. Resistance then is a result of the evacuee's failure to accept WRA's solution to his problem, and this failure is a result of his not having the opportunity to develop the insight into his problem which the WRA has developed. Again it may partly be due to difficulty of communication, and partly due to unwillingness on the part of WRA to take the people fully into their confidence; to give opportunity and time for full discussion and insight and then to leave responsibility with them in working out their plans based on this insight.

> As an example: WRA says, because you are going to resettle in communities throughout the country and become assimilated into the life of those communities you had better learn to speak English. So we will set up English classes in our adult education department and teach you English. The Issei do not show up for English classes in large numbers, and we interpret it as resistance. In reality he does not accept the premise WRA starts with and therefore does not see the need for learning English. This may be interpreted as resistance while it actually constitutes two different lines of thought.

Summary

Community Analysis functioned in the WRA program to help in the definition of many of the most important problems which the agency faced. The administrators were working with unfamiliar material--people whose background was strange to them and whose recent experience gave rise to behavior which was not intelligible if one did not understand the psychological impact of that experience. Problems in center management and in resettlement could not be defined adequately if the motives and reactions of the human beings involved were left out of account. Community Analysis constantly presented to the administrators who were making daily decisions the nature of the past, present, and probable future reactions of those human beings. Its most important contribution was in keeping a focus on the hopes, fears, and points of view of the people whose problems the program was designed to solve.

In doing this Community Analysis was not defining the whole of any problem which faced the administrators. It brought up for consideration one aspect among the many that had to be taken into account. The defined powers of the agency, the budget, changing Congressional attitudes, relations

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with other government agencies, and American public opinion all shaped policy. The extent to which the program could take account of the human element represented in the evacuee viewpoint depended on the balance of these factors in a given decision. The relative importance of the human factor varied in different situations. Sometimes it was not weighted, in view of the administrators, as a major factor, and Community Analysis became merely a guide as to what to expect after an action was taken. At other times it was rated as of major importance and Community Analysis became a guide in planning the course of action.

Community Analysis helped guide the program in two rather distinct ways. On the one hand, it offered predictions concerning what would most probably be the result of alternative actions by the administration. In estimating the probable reactions of the administered people it provided a basis for choosing among alternatives. On the other hand, Community Analysis served an important function in formulating the lessons of hindsight. The fast moving WRA program was constantly entering a new phase of action while the effects of the previous phase were still taking place. Systematic evaluation of what the program had accomplished or failed to accomplish, in terms of what it had done to the people, was repeatedly necessary. The strategy of next steps depended on such knowledge. The function of Community Analysis in periodically measuring the effects of the program was equally important with that of predicting the future.

The role of Community Analysis was that of an aid in maintaining communication between a group of administrators and a group of administered people. By communicating the viewpoint of the administered, it aided in the adjustment of the program to needs of the people as the latter saw them. Where the framework of policy permitted little adjustment, Community Analysis merely served to define the issues. Where considerable adjustment was permitted, Community Analysis was a useful guide to action.

APPENDIX I

FOUR MODELS FOR ADMINISTRATION

FOUR MODELS FOR ADMINISTRATION

The kinds and effectiveness of services ultimately delivered to the community will depend very much on the management philosophy and practices of people responsible for administration of these services.

(1) A CHURCHILL DIVERSION ADMINISTRATIVE UNIT (AUTHORITY)

- headed by a person of at least A.D.M. status

A Department of Northern Affairs function - with a senior inter-departmental or even inter-government Advisory or consultative committee.

Would develop a particular liaison with, and work through the Community Council which should be strengthened with adequate financial and technical assistance without infringing upon its autonomy, weakening its authority or lessening its responsibility.

ADVANTAGES	DISADVANTAGES
- Establishes a single integrated authority	- Difficulty of ensuring that other necessary government services will be available as and when required eg. when the community is ready to move in respect to any of them
- Provides ready access to other necessary departmental and other government services - extension - local services - research - resource use planning - economic development	- Potential inter-departmental rivallry
- Provides the community with a single contact	- May stifle community initiative and develop dependancy
- Consultative Committee would facilitate inter-departmental co-operation	

(2) LABOUR MANAGEMENT MODEL

A Three Person Government - Community Liaison Committee (South Indian Lake
Administration
Authority
or
Nelson River Agency)

Government Appointee   Community Council Appointee

who recommend to their respective governments the appointment of a disinterested third person as Committee Chairman

Committee given specific terms of reference related to goals mutually acceptable to Government and Council and the necessary authority and resources to do a job. e.g. initially - to facilitate mutual attitude modification (accommodation)

then
- to develop and maintain an atmosphere of mutual trust and understanding in which effective working together can happen
- to plan for problems of adjustment
- to develop models for negotiating compensation, etc.

The Committee would maintain a functional liaison between the community and government agencies and among the community, government and other agencies. It would provide an advisory service to government and the community also. Administratively the committee would report to which ever Department is to be the one responsible for South Indian Lake Development.

An information - communication - catalyst function would be an essential one in both the Government and Community systems. That service might be arranged as in the proposed Information-Communication Participation Model or it could be contracted out to an independent agency eg. Manitoba Indian Brotherhood, Manitoba Metis Federation, Commonact, University, etc.

This Committee's terms of reference should include responsibility for specific preliminary work with communities concerned for negotiating compensation settlements including developing rationale, eligibility criterion, basis for establishing rates of settlement, etc.

(3) THE GRAND RAPIDS FOREBAY COMMITTEE MODEL

The Grand Rapids Forebay Committee was invented to provide Government with a responsible approach to problem solving. Instead, the Committee provided Government departments with a means of avoiding normal responsibilities. Almost anything to do with either Easterville or Moose Lake was considered a Forebay Committee responsibility.

Terms of Reference:

i) Co-ordinate all governments agencies involved.
ii) Negotiate with the people of Chemahawin.
iii) Keep the people informed of developments concerning the relocation and the power project.
iv) Inform residents of Chemahawin of decisions made in Winnipeg.
v) Provide administrative services for relocation.

Features:

- the Committee's responsibility exceeded its authority and its resources
- it had no legal authority
- Committee work was a part-time function of already busy civil servants

- it had relatively no autonomy
- unable to get other departments to adopt their programs to the peculiar needs of the communities, eg. Education, Co-op Services, even Mines, Resources & Environmental Management
- Committee was not able to resolve inter-personal strife and interdepartmental jealousies
- The Committee strucutre was a complex one-there was a Forebay Admin. Committee; An Economic Liaison Committee; a The Pas Advisory Committee; Local Forebay Committee, Local representatives to Economic Liaison Committee which ultimately was superceded by the Economic Development Committee which was later subsumed by the Admin. Committee.
- The Committee has a field representative who was sometimes referred to as the Admin. Officer; a Forebay Project Manager; a project supervisor; all responsible to Mines, Resources & Environmental Management. Then there was a community Development worker responsible to the Department of Welfare. Often Things & People interests didn't jibe. Indian Affairs had at least three people on the loose in the area.
- The Admin. Committee became to be seen as a Government tool whose purpose was to defend some often obscure Government position to the point where field people were seen to be defenders of the local residents' rights, etc.
- The Committee was too far removed administratively and communication-wise from the communities and the more it became institutionalized the less flexible and less sensitive to peoples' needs it became.

(4) NELSON AGENCY MODEL

In March, 1967, consultant to the previous Government observed, "Since there will be more than one government agency involved in the project it is absolutely essential that efforts be co-ordinated. This means:

i) sharing as much information as possible with agencies involved,
ii) consultation with these agencies,
iii) clear lines of communication established,

iv) field staff be well informed of devemopments and decisions being made in Winnipeg,

v) continuous consultation with field staff,

vi) every effort made to avoid personality conflicts - in other words, every one involved should understand the role of other participants - overlapping roles should not indicate competition but rather, complementary service

"It was agreed at the meeting of MDA on April 3rd, 1967 that co-ordination of government services connected with the relocation of residents of South Indian Lake should be effected through making one individual in Winnipeg responsible for the co-ordination of all services to that community. This decision was based on lessons learned from the Grand Rapids Forebay experience (Easterville and Moose Lake)."

In July, 1967 a proposal was made to the Premier "that the Chief of the Nelson Agency .. be responsible for co-ordinating the activities of all government departments as they relate to Southern Indian Lake."

In September, 1967 the Chief of the Nelson Agency recommended to the MDA, "To avoid the confusion which would be bound to arise if those services were administered separately, one official should be appointed to be the link between the local people and government (both federal and provincial, if that is possible). He would call upon the services as they were needed and in the light of his local knowledge would determine the extent to which the services were needed. To cope successfully with the problems which are likely to arise, it is essential that there be a considerable degree of flexibility in the administration of all those services. To achieve the most satisfactory result, the Departments which provide them expect the services to be used much as an artist uses his colours - applying each as required, in just the right place and in just the right quantity, and not afraid to change one for another if the first turns out not to be the right one for a particular effect."

Even though this arrangement called for a person to work in the community to be responsible to the Chief of the Nelson Agency, the proposals being made did not make provision for active community participation in planning and implementing programs of information, communication and other services.

APPENDIX J

INFORMATION-COMMUNICATION MODELS

(I) COMMUNITY EDUCATION - COMMUNITY LIFE-SKILLS MODEL

(Leadership Development, Decision-Making)

The Manitoba Human Relations Centre has assessed the situations existing at South Indian Lake. Their assessment is shared by Northern Affairs communications professionals and others. Their assumptions are generally consistent with the conclusions we have reached in the course of our current study. The proposal for "Community Education and Community Life-Skills" is probably the most effective information-communication model that could be devised at this time.

The Centre's assumptions about the logic of the situation at South Indian Lake, and therefore the bases for its proposed approach to the community, are as follows: (The material in parenthesis have been added by the study team.)

Assumptions:

1. Confusion exists.
2. State of distrust limits effectiveness of government to function in the community.
3. Community does not distinguish any essential difference between government departments; therefore, (e.g.) co-operation with Northern Affairs Operations Branch (or the Socio-Economic Impact Study Group) implies acquiescence to flooding.
4. Community handles this by:
   - withdrawl from dialogue
   - relying on lawyer
   - laying all hope on court action
5. Community not prepared for the shock of the eventual implementation of project.
6. There are no lines of defense.
7. Community needs an internal structure adequate to:

   a) deal with the flooding,
   b) deal with government programmed response to flooding (and other programming associated in the peoples minds with flooding).

8. Government sees necessity of:

   a) implementing project
   b) responding to community needs.

9. Government is in a position at this time where it cannot:

   a) directly provide developmental resources to the community - the community rejects this
   b) stop the decision-making process which will radically affect the community's life in a long-term sense.

10. The community must be given resources which it will accept and which it can use.

11. These resources can only be provided by non-government source which will be acceptable to government in terms of its credibility, etc.

12. The community is not yet in a position to:

   a) articulate its needs
   b) see alternatives to its present line of actions
   c) negotiate a program which will serve its developmental needs, at this moment in time.

13. A primary step is needed which will allow the community to discover:

   a) the dimensions of its internal needs
   b) the resources to respond to them.

14. The community will need designated funds to obtain 13 (a) and 13 (b).

15. A process of community education and community life skills development will provide the necessary link.

16. Such a link is defined as:

   1. being skill oriented,
   2. a positive force geared toward effective relationships with provincial authorities.

17. It is not a clandestine process to increase tension and resistence to government; nor is it a process of brainwashing designed to control and manipulate the community.

18. A community skills process allows for the development of the normal fabric of a northern community, which results in the responsible articulation of community-oriented goals and purposes.

A CONSISTENT LONG-TERM PROCESS OF COMMUNITY EDUCATION AND COMMUNITY LIFE-SKILLS DEVELOPMENT

Goals:

- reducing confusion, misinformation and despair
- channel shock of change
- increase effectiveness of the community to deal with change
- creating adequate internal community structure
- develop adequate lines of defense
- relate and communicate effectively with government
- ensure that the community's:
    - desires and needs are communicated
    - desires and needs are responded to within the limits of reality through a skill development process.

Flow:

1. Stimulating an awareness of needs related to problem solving, decision-making, communications, etc.

2. Developing a willingness to learn and grow.

3. Achieving a community commitment to learn and grow.

4. Actual learning - reality orientation areas:

    - learning about what's happening
    - learning about freedoms
    - learning how to bring community together
    - the council and community communicating
    - planning
    - priorizing
    - decision-making
    - information-utilization
    - dealing with outsiders
    - relating to government personnel
    - developing lines of defense
    - learning to negotiate.

An essential part of any new government approach to South Indian Lake would be a more deliberate attempt to co-ordinate government information inputs and services to the community. No attempt has been made to date to engage a multiplicity of agency people in understanding a government position in respect to the community. Therefore, each agency approaches the community from the point of view of its own self interest. Such a situation controls neither for discrepant points of view nor for conflicting approaches, factors which tend to confound community confusion. Inherent in this proposed approach is an inter-agency and/or inter-agency-community workshop designed to correct this situation.

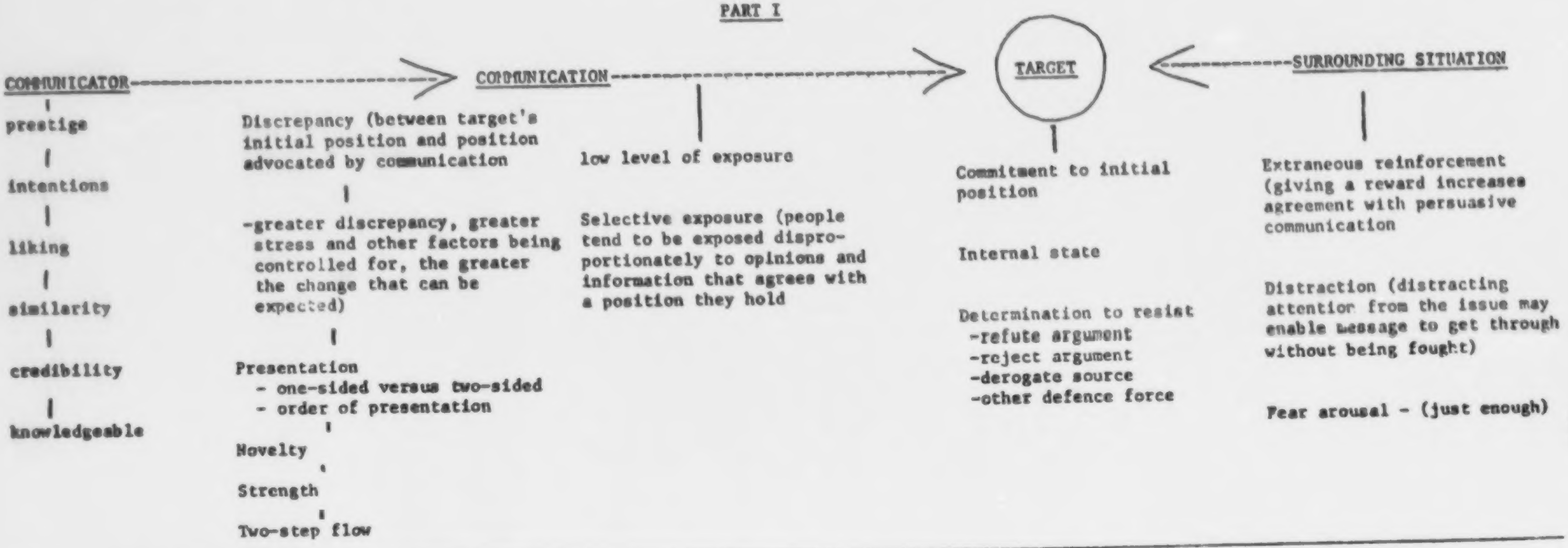
This required entree to the community by a development team could be implemented more effectively if it were made during the recommended moratorium on government initiated activities. The entree would have to be made with skill in view of the situation assumed to exist, but there are acceptable ways of doing this.

APPENDIX

INFORMATION - COMMUNICATION MODELS

(2)- ATTITUDE CHANGE MODEL

PART I



COMMUNICATOR

prestige

intentions

liking

similarity

credibility

knowledgeable

Discrepancy (between target's initial position and position advocated by communication

-greater discrepancy, greater stress and other factors being controlled for, the greater the change that can be expected)

Presentation
- one-sided versus two-sided
- order of presentation

Novelty

Strength

Two-step flow

COMMUNICATION

low level of exposure

Selective exposure (people tend to be exposed disproportionately to opinions and information that agrees with a position they hold

TARGET

Commitment to initial position

Internal state

Determination to resist
-refute argument
-reject argument
-derogate source
-other defence force

SURROUNDING SITUATION

Extraneous reinforcement (giving a reward increases agreement with persuasive communication

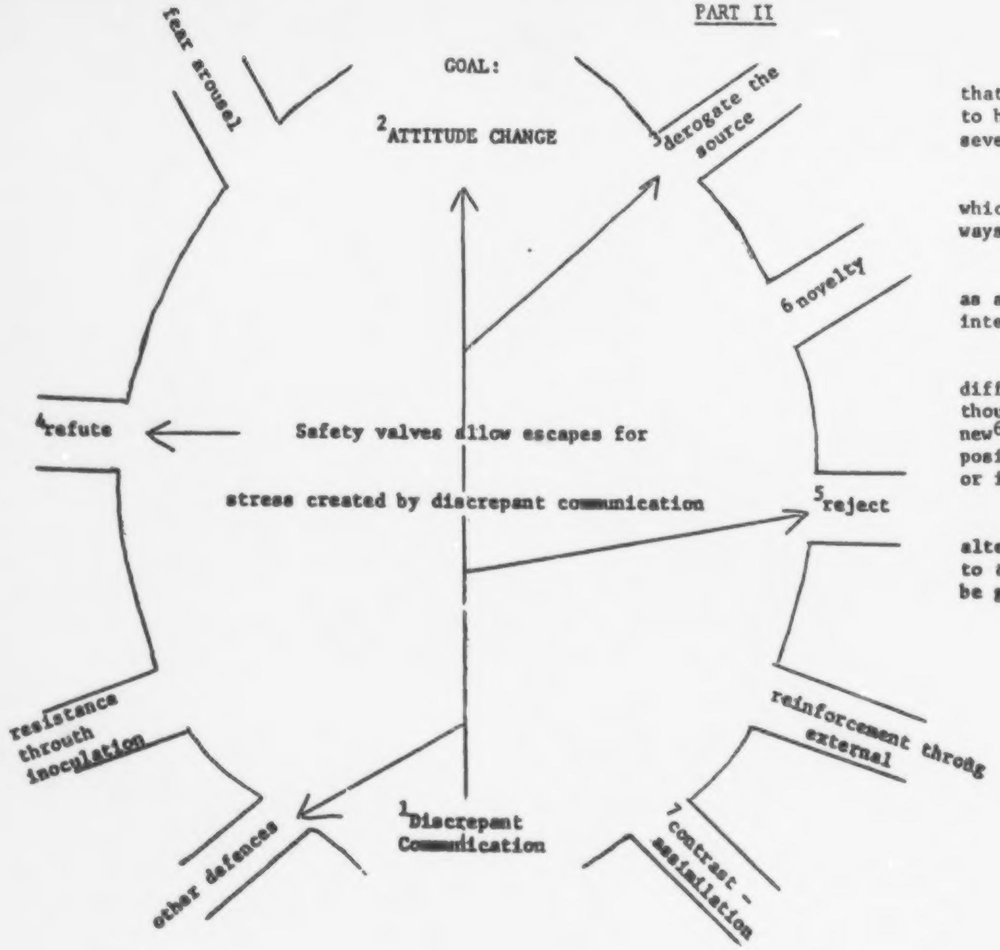
Distraction (distracting attention from the issue may enable message to get through without being fought)

Fear arousal - (just enough)

Model of attitude change strategy showing examples of important factors at each stage. Amount of attitude change that occurs is determined by several variables at each point in the process.

ATTITUDE CHANGE MODEL

PART II


GOAL:
2 ATTITUDE CHANGE
fear arousel
3 derogate the source
6 novelty
4 refute
Safety valves allow escapes for
stress created by discrepant communication
5 reject
resistance throuth inoculation
reinforcement throug external
1 Discrepant Communication
other defences
7 contrast - assimilation

When a target is presented with a communication[1] that is discrepant with a position he holds and is committed to he experiences stress which may be reduced in one of several ways:

The stress can be reduced by a change in attitude[2] which is the goal. However, the target may look for other ways out of the stressful situation.

He may derogate the source[3] of the communication - as a person of no account - low prestige - known to self-interest motivated - not knowledgeable, biased, etc.

He may refute[4] the arguments or if he has difficulty refuting them he may simply reject[5] arguments as though they were utterly unreal or didn't exist or nothing new[6]. He may regard the communication to be so close to position held that there is no need to change (assimulation) or is so far out (contrast) that it has no relevance[7].

The theory is that if you control for the alternatives the only out will be to change attitude and to the extent that change is experienced at all, it will be greater under these circumstances.

INFORMATION - COMMUNICATION MODELS

(3) A Participation (Partnership) Information - Communication Model

Community System

Government System

Goal: initially to cause Mutual Attitude Modification (mutual attitude accommodation),
: to develop and maintain an atmosphere of mutual trust and understanding in which effective working relationships can happen.

Catalysts Required

In the Government System

helping it:- and its various relevant parts to understand the community and its current position

- to adapt to the extent possible and necessary, general ways of providing services to remote communities, to meet the specific needs of a particular community
- to develop and maintain a readiness to respond
- in group building among its personnel who have a role to play in the South Indian Lake situation and its various parts
- to respond appropriately to community representation

In the Community System

helping it:- to apply or adapt traditional problem solving and decision-making techniques to circumstances created largely by external forces

- to sort out the information it has and organize its thinking about changes that are known or predicted to be inherent in the proposed hydro development
- to articulate and communicate its concerns effectively
- to identify and document needs areas
  - problems in communication
  - action required to be taken
  - problems inherent in inaction
    - inappropriate action
    - unco-ordinated action
- to take effective action from among possible alternatives in respect to various needs as they arise

The catalyst function in both systems a part of the same process
(By two people selected jointly by Community & Government)

PARTICIPATION MODEL (cont'd)

|

Accountable to a joint Government - Community
co-ordinating committee such as Norway House -
Cross Lake Co-ordinating Committee

or - The Pas Information-Communication Directorate
or - Northern Manpower Corps Directorate - Eastern Unit

|

Resulting in a co-operative community-government working relationship

(4) OTHER MODELS

4 Information-Communication - (The Pas Special Area)

5 Extension Services (Information Centres) Model - Department of Northern Affairs (different from 4 in method of administration)

6 Information Co-ordination (Current South Indian Service) - a limited version of 4 and 5

7 Social Action Model

8 Community Development Model

9 Various Public Participation Models

10. Data-Based Social Intervention Model

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LAKE WINNIPEG, CHURCHILL AND NELSON RIVERS STUDY BOARD

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A - SOCIAL CHANGE AND STRESS: A FOCUS ON NORTHERN DEVELOPMENT

B - A PROPOSAL FOR A NORTHERN MANITOBA NATIVE CULTURAL CENTRE OR MUSEUM

C - THE IMPACT OF DEVELOPMENT ON NUTRITION IN REMOTE NORTHERN MANITOBA COMMUNITIES

D - SIMULATION OF ALTERNATIVES FOR THE SOUTH INDIAN LAKE COMMERCIAL FISHERY

E - REPORT ON INDIAN AFFAIRS BRANCH HUMAN RESOURCE SURVEY

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G - SOCIAL IMPACT PROGRAM

H - LITERATURE REVIEW: SOCIO-ECONOMIC IMPACT PERTAINING TO NATIVE PEOPLE

SOCIAL CHANGE AND STRESS:
A FOCUS ON NORTHERN DEVELOPMENT

by

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Winnipeg, Manitoba
June, 1974

for

THE LAKE WINNIPEG, CHURCHILL AND NELSON RIVERS STUDY BOARD

SPECIAL NOTE

THE CONCLUSIONS AND RECOMMENDATIONS CONTAINED IN THIS APPENDIX ARE THOSE OF THE AUTHOR(S) AND ARE NOT NECESSARILY THE SAME AS THE CONCLUSIONS AND RECOMMENDATIONS OF THE LAKE WINNIPEG, CHURCHILL AND NELSON RIVERS STUDY BOARD AS EXPRESSED IN THE SUMMARY REPORT AND THE TECHNICAL REPORT.

PREFACE

This paper is one of a series of technical reports prepared or initiated by the Social and Economic Impact Study Team as background to a report entitled Social and Economic Impact Study, Churchill-Nelson Rivers Hydro Development.

The purpose of the impact study is to identify the potential social and economic impacts of hydroelectric power projects on remote northern Manitoba communities, and to recommend mitigation and development measures.

The technical paper "Social Change and Stress: A Focus on Northern Development" provides a basis for understanding the social and psychological stress that is inherent in social and technological change.

One of the major conclusions of the Social & Economic Impact Study is that a very significant social impact of the proposed Hydro development in the north is the stress the inherent changes will impose on social structures of communities in the process of transition towards modernization.

The review in the Paper of relevant social and psychological stress theory with the brief accounts of what was done or not done in a number of development projects in the

United States and Canada to cope with stress of change is very relevant to the current northern Manitobs situation.

The conclusions arrived at in the Paper suggest the importance of appropriate social intervention as a concomitant to physical development and change.

The Paper offers suggestions for an appropriate intervention process and points to the need for community-specific, action-oriented research which, to be effective, would have to include meaningful community participation. This reinforces the findings, conclusions and recommendations of the Social and Economic Impact Study.

J. D. Collinson,
Assistant Deputy Minister,
Department of Mines, Resources
and Environmental Management.

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ABSTRACT

This report attempts to outline the theories of stress and the components of social change with the ultimate intention of integrating these two rather broad concepts. The effects of change on social and psychological stress have become a topic of great concern in recent years, despite the dearth of empirical evidence that could serve to strengthen the theoretical relationship that now exists. By and large, the most provocative and inclusive study of the relationship between social change and stress was conducted by Alvin Toffler in the book entitled "Future Shock." Toffler (1970) suggests that the rapidly accelerating pace of change which has overtaken present day society holds little relevance for the common man, providing only a greater degree of alienation between man and his environment. Consequently, man becomes disoriented and unfamiliar with the social and psychological cues which pervade his ever-changing environment such that his typical behaviour in a given situation may no longer be appropriate. This "dizzying disorientation brought on by the premature arrival of the future" (Toffler, 1970) can justifiably be construed as stress.

The applicability of this concept of future shock to northern Manitoba communities in the process of being dislocated physically, and socially by Hydro-electric power development and other forms of industrialization is apparent. The underlying

theme of the present report is to suggest that the incorporation of 20th Century technology into a pre-modern society may have stressful repercussions unless such an endeavour is conducted with the least amount of resistance and maximum amount of open communication. This conclusion essentially has been drawn from the study of industry and social order, stress theory and experimentation, and historical examples of the effects of similar projects. It is suggested further that regardless of whether precautionary measures are used by Government agencies, in the transition from traditional to modern society, stress is still likely to be experienced by the residents if due only to lack of information. It is pointed out that when this is the case and stress cannot be entirely avoided, emphasis must be placed on the alleviation or minimization of stress by the introduction of appropriate communication channels.

Social indicators are presented and expounded as the best means of monitoring social change and measuring its effect, be it represented by progress or stress. A number of standard indices are explored due to their simple application and widespread use. In addition, a number of new social indicators, some being variations of the standard ones, are proposed as being quite aptly suited to the conditions in the present area of study.

Finally, brief attention is given to some of the conclusions and proposals which could be derived from the social/ psychological theories dealing with stress and interpersonal relations. An attempt is made to expand the implications of certain psychological findings such that inferences could be drawn about (1) the effects of change on social and psychological stress, (2) in what forms stress is experienced and manifested, and (3) how stress can be avoided, alleviated, and/or minimized.

I THE DYNAMICS OF SOCIAL CHANGE

A. Social Change:

One of the most pervasive aspects of present-day societies (worldwide) is the rapidly accelerating rate of social change. No longer is it simply a matter of voluntary commitment to progress, however, cultures that do not change are no longer capable of coping with technologically more advanced cultures and as a result eventually die out (Niehoff, 1966). Evidence for this can be found in the disappearance of a number of American Indian tribes in the latter part of the nineteenth century. A less dramatic but possibly more debilitating consequence of failure to change is the military-economic-political takeover and domination of a backward culture by a more powerful nation. For example, when Asian, African, and South American countries were found to be potentially ripe in natural resources, the established European countries and more recently the United States, were willing to provide "assistance" in the development of these resources. These supposedly helpful gestures, which have been referred to elsewhere as imperialism, resulted in economic exploitation, acculturation, and above all, social change. A rule to be derived from this ever recurring story would resemble an ultimatum to underdeveloped societies; change or be changed.

According to Moore (1967) social change is a term that may cover a wide range of phenomena:

> "Social change is the significant alteration of social structures (that is patterns of action and interaction), including consequences and manifestations of such structures embodied in norms (rules of conduct), values, and cultural products or symbols. (p. 3)

Structures, in this context, refer to patterns of action and social interaction (Wrightsman, 1972); voting on election day as a means of naming a new mayor is a structure. Norms refer to rules of conduct; it is normative to vote, to have one's vote counted accurately, and to have the candidate with the most votes be named mayor. The transfer of the mayoralty from one candidate to another does not represent a social change because it does not go beyond the boundaries of our norms and patterns of social action. But if the incumbent mayor assumed exclusive control so that there was no possibility for transfer, the system would have been altered and social change would have occurred. It can be seen that the concept of social change refers to a change which permeates a whole system, rather than when it appears only in sequences of actions that make up a system.

B. Future Shock:

Before delving into the various theoretical outlooks on the dynamics of social change, ie., what it is, what structures are involved, and what it brings with it, it would be useful to focus initial attention on the human perspective of social change. That is, how is transition observed, interpreted, and reacted to by the common man? Alvin Toffler (1970) has attempted to answer these questions in terms of the phenomenon he chooses to speak of as "future shock", a collective state of mind created by too much change occurring too fast.

Toffler views future shock as a psychological disease not unlike the parallel term "culture shock". This latter term has been defined as the effect that immersion in a strange culture has on the unprepared visitor. It is what happens when the familiar psychological cues that help an individual to function in society are suddenly withdrawn and replaced by new ones that are strange or incomprehensible. Yet, according to Toffler, culture shock is relatively mild in comparison with the much more serious malady, future shock. Future shock, is the "dizzying disorientation brought on by the premature arrival of the future". (p. 11)

Future shock is a time phenomenon, a product of the greatly accelerated rate of change in society. It arises from the superimposition of a new culture on an old one. Most travellers have the comforting knowledge that the culture they left behind will be there to return to. The victim of future shock, however, is "stranded in the present" (Keniston, 1970) with anything to return to irretrievably lost in the past.

Most of Toffler's research and insight was intended to deal with future shock as a pervasive social disease affecting all modern societies. The observation that change is accelerating much faster than people's ability to adapt is supposedly a problem inherent in those societies which have reached a coping level. The implications of such a scientific theory may defy rational analysis when applied to a so-called backward society. In essence, the question to be posed is, if modern societies cannot maintain a pace comparative to that being set by the change machine, would it not be nigh impossible to bridge the 40-100 year technological gap between an isolated community and present-day societies? This is not a theoretical question nor can it be answered by a simple yes-no analysis. The fact that such a transition has been successfully undertaken (refer to examples in section IV) indicates that it certainly can be done. However, the enduring social, psychological, spiritual and political consequences of rapid change have not as yet been documented. Since it is people that are mainly affected, consideration of human effects cannot be ignored. Before proceeding with the interaction between social change and human functioning, however, it would be conducive to the purposes of this research to outline the general principles which have been studied in relation to social change and its components.

C. Modernization:

In discussing the dynamics of social change, it is necessary to introduce the literature's use of conventional terms and referents. In the present context, the words "modernization" and "industrialization" are used interchangeably, and for good reason: neither term is mutually exclusive in meaning and as a result, one implies the other. Although modernization is the more encompassing term (subsuming both industrialization and economic growth and development), the distinction cannot be drawn without numerous qualifications. Suffice it to say that in the discussion forthcoming, modernization refers to an abstract concept while industrialization or industry refers to a physical entity.

An additional point which requires some elaboration pertains to the generality of the social change model presented herein. Although most of the literature on social change has been derived from observations of third-world countries, certain generalizations can be made without becoming overly speculative The rapid incorporation of virtually every part of the world into the international and political "community" marks the end, or the beginning of the end, for isolated and "backward" tribal communities and also for complex but obsolete civilizations. In this sense, and it would appear that it is only in this sense, the unification of the world is already nearly complete.

The process of modernization is broad, and the strands that make it up are somewhat separable from one another. In one area at one time, the problem may be defined as that of reducing illiteracy or providing drinkable water to urban slums or spraying mosquito-breeding swamps with chemicals to control malaria. In other places at other times, roads or hydroelectric power installations may be given top priority, as in Northern Manitoba. In still other places, or in the same places at other times, precedence may go to capital-goods industries, light consumer-goods industries, or a revamped civil service.

What is typically involved in modernization is a total transformation of a traditional or pre-modern society into the types of technology and associated social organizations that characterize the "advanced", economically prosperous, and relatively politically stable nations of the western world (Moore, 1963). Because so many aspects of the social order in the under-developed areas of the world do not conform with the model set by advanced countries, or centres, there is room for change in practically any direction one looks. The definition of which problems are most urgent tends to be made by the reigning political authorities, and may or may not fit what an "objective" social analyst would seize on as the most strategic factors for what is agreed to be the ultimate goal: a general transformation of the conditions of life and the way life is socially organized.

1. Economic Development

The process of modernization is most commonly approached in terms of economic growth and development. Economic development generally refers to the growth of output per head of population (Lewis, 1955) or the principle of increased efficiency. For purposes of analyzing the relationships between economic growth and the social structure, it is possible to isolate the effects of several interrelated technical, economic, and ecological processes that frequently accompany development. These may be listed as follows:

i) in the realm of technology, the change from simple and traditional techniques toward the application of scientific knowledge,

ii) in agriculture, the evolution from subsistence farming toward commercial production of agricultural goods,

iii) in industry, the transition from the use of human and animal power toward mechanization,

iv) in ecological arrangements, the movement from farm and village toward urban centres, (Smelser, 1968).

These several processes often, but not necessarily, occur simultaneously. For example, the present prospectus in northern Manitoba involves the introduction of technology, industrialization, and semi-urbanization.

Economic development is not only relevant to an increase in output, however. Such an increase eventuates in rising per capita levels of living which in turn requires additional services.

The provision of a modern civil service, which is a necessity for community order, would be virtually impossible without salaries and pay schedules. Education may be viewed as essential for an informed electorate, yet schools and books and teachers require money or its equivalent. Land reform cannot be effectively launched without providing the owners with new capital, improved techniques, and changed marketing. With a greater distribution of income, such facilities are not only available but affordable as well, such that they may be demanded.

2. Industrialization

It is reasonably proper, therefore, to consider modernization in terms of economic growth. In fact, we may pursue the convention further and speak of the process as industrialization. This term refers to the extensive use of inanimate sources of power for economic production, and all that that entails by way of organization, transportation, communication, and so on (Moore, 1963). This model of industrialization is quite applicable to the task at hand in developing hydroelectric potential in northern Manitoba. As stated earlier, industrialization not only includes the introduction of industry but more important, the structural changes within a society inherent in this type of venture.

As is common in the study of any form of change, concern is given to the sequence of events which precede and eventually follow industrialization. From these before and after comparisons or "comparative statics" (Moore, 1963), an attempt is made to formulate a model of social change. The model informs us theoretically, and a multitude of observational studies confirm empirically which elements of preindustrial social system cannot persist in an industrialized economy. The model also informs us theoretically, with empirical confirmation, concerning the new modes of social organization required by an industrial system. The strands that are missing within such a model, and that must remain missing until the proper questions are cogently put to data, include the range and temporal duration of tolerable variation, and particularly the sequential connections between cause - industrialization, and ultimate effect - a modernized society.

Although the solution is not ideal, there is some gain in distinguishing structural preconditions on the one hand and the concomitants and consequences of industrialization on the other. This is the first step toward the desirable sequence models. Economic development, universally sought as a matter of public policy and social welfare by the officials of underdeveloped and advanced centres alike, requires something more than the pious wish for a better quality of life coupled with some simple tricks of technology and organization. In fact, this goal itself is a major precondition for economic development, for although some industrialization may occur in the face of official indifference or hostility, it is not likely to proceed very far very fast.

3. Preconditions for Modernization

Moore (1963) has compiled a number of necessary preconditions some which are described here. Again, it must be pointed out that these conditions apply to developing nations, although it can be assumed that significant changes are usually enforced changes which are welcomed by officials and spokesmen and passively accepted by the populace. When a potential change is opposed, the following conditions must be cultivated by the change agent.

One of the most crucial conditions that is necessary for the modernization process is some change in values. Values provide the rationale for particular norms, or rules of organization and conduct. The value of economic growth requires, for example, a fairly high degree of individual mobility and a placement system grounded on merit in performance. This requirement is likely to come into conflict with a number of strongly supported values relating to the primacy of kinship position and obligations as a moral virtue. In this sense, extensive value changes are the most fundamental condition for economic transformation (Hoselitz and Moore, 1968). The resulting tensions will constitute problems that will be only partially resolved by change in values.

Consideration must also be given to institutional conditions for industrialization, by institution meaning complexes of norms relating to a major aspect of social structure - for example marriage or economic exchange. Institutions are relational in social systems in a dual sense. Marriage, for example, constitutes a set of codes of primary relevance to the family, but also provides a major link between the family and other segments of society. In order to change with change, institutions must focus strong emphasis on mobility. That is, property rights should be transferrable, labour must be structured such that mobility is not hampered by prior social position, a system of exchange must be static with wholesale credit agreements, etc. In short, institutions should be flexible.

Some of the organizational requirements for industrialization are obvious. Most essential is some kind of orderly structure for the making of decisions by the populace as well as by the administrators. The organization of work itself must be made to fit into daily existence as an integral duty. Second order consideration must be given to the organization of fiscal problems, i.e., tax collection, community debts, etc. Further down, provision must be made for housing, water and sewers, public transportation, etc. What must [illegible] the community of change is that with change a number [illegible]ations must be made.

A simple desire for a better life does not automatically lead to its own fulfillment. Institutional and organizational changes intervene. And even motivation cannot be assumed. Although Weber's emphasis on the importance of the "protestant ethic" (1930) as precedent to the emergence of capitalism is clearly not a necessary precondition of industrialization in the contemporary world, some degree of achievement motivation, of ambition for personal betterment and the acquisition of the education and skills to further that ambition, must exist in some groups and spread rather widely, if sustained growth is to be accomplished. This stands to reason in that advancement is certainly facilitated by some manner of participation rather than passive adjustment by most of the population. In this way the populace will be better able to handle organized change, for the quest for modernization must almost certainly feature political mobilization as the major instrumentality of change (Wilson, 1973).

These are but a few of the preconditions as proposed by social theorists. Although not all factors can be adequately considered within the scope of this report, the most crucial systems were considered, i.e., the values inherent in a society, the organization of the society with all of its basic institutions, and finally, the desire for change maintained within the populace. Lacking these critical societal features in favour of change would certainly lead to retardation or a possible stifling of an "industrial invasion".

D. Physical Concomitants of Change:

As was touched on earlier, when some form of industrialization is introduced to a subsistence community, it brings with it a number of additional potential alterations which may represent enduring changes within the community. The most pervasive result of these concomitants is an increased diversification of the population, institutions, and values or demands of the inhabitants.

1. Population

The most immediate physical effect of the modernization process is the change in population size and composition. The old social order consists mainly of a homogenous population, if not in race, then in value systems and in way of life. With modernization, the population not only increases in size but in complexity as well. The industrial workers themselves (skilled or unskilled) represent distinct groups. Professional and service agencies associated with the industrial complex add further to this variation. Finally, as is typical and consistent in any rural-urban transition, the promise of prosperity attached to urbanization attracts droves of residents from outlying communities. This exodus often leads to the almost immediate problem of over-urbanization, i.e., migration from rural areas at a rate higher than the expansion of employment opportunities. This may not be a critical problem in northern Manitoba especially if the project involves a number of industrial innovations in various communities. This would serve to spread the influx (Dyck, 1970).

2. Institutions

The concept of mobility pervades any discussion of social change in every sense. This entails an expansion of commitments from the immediate nuclear family and kinships to some form of employment, retail outlets, landowners, the social community, etc. Thus a person must extend his/her relationships from a simple structure to one that involves greater responsibility to a greater number of institutions (Soedjatmoko, 1958). The system of education which has largely been a function of parent-child communication, changes to a more centralized one in which a greater deal of teaching is accomplished in the schools. Bases of interpersonal communication such as language may fall into disuse with the requirement that in order to cope with the industrial society, English is required. Skills required for existence may and do become more specific and more refined when the head of a household becomes a worker rather than a provider.

3. Services

To a great extent, this category involves the evolution of values, desires, demands, etc. With rising minimum and average per capita incomes, the consumption of necessities first rises, followed by various comforts and luxuries. Eventually, services represent a rising proportion of consumer expenditures as compared with all types of consumer goods. The range of goods, including both highly specialized items and alternative products for the same use, expands steadily with industrialization. This is largely a function of the availability of services combined with the incorporation of the "newcomers" value systems (Smith, 1965).

II SOCIAL INDICATORS

A. Definition and Usage:

The social scientist can construct theories of social change and speculate to no end about its effects, but not until some relevant system of measurement is devised can such theoretical hypothesis be empirically tested. Such a means of monitoring social change has been the use of social indicators (Feldman and Moore, 1968). According to Bauer (1966), social indicators are statistics, statistical series, and all other forms of evidence that enable us to assess where we stand and are going with respect to our values and goals, and to evaluate specific programs and determine their impact. The major usefulness of social indicators is that they meet the need for a way to anticipate the consequences of rapid technological change and the second-order effects of change in beliefs and values (Wrightsman, 1972).

Technical innovations are usually seen as advances in technology in general, and therefore, they are identified with progress. In a civilization that places a high value on science and technology, and places almost a supreme value on progress, it is no wonder that concern for the consequences of technological change is frequently met with the rejoinder "but you can't stand in the way of progress"! An additional culturally popular argument is that while innovation has always been greeted with doubts, western civilization has continued to make material progress. Of interest to the social scientist is whether human progress has been able to match steps with the accelerating rate of material progress.

Obviously, there has been no inhibition against our thinking about the second-order consequences of technical innovation. True, some of the most active thinking has been done by those persons who were immediately adversely affected - workers displaced by machines, homeowners displaced by highway construction, and residents displaced by forced flooding. In empirically studying the problem, however, one encounters the difficult question of how one actually relates a given activity to the secondary effects that it presumably produces. The point must be made that the existence of good data on certain changes in the society will not necessarily make it possible to _isolate_ the effect of a specific program (Bauer, 1966). Since the circumstances in the area under consideration in the present report involve only one significant change, however, tracing of the cause from an observed effect might be facilitated.

It can be seen that the purpose of social indicators is not primarily to record historical events but to help understand social developments and to provide the basis of planning for future policies. Such planning should not be based on the assumption of the single most probable outcome nor should it confuse the probability with the seriousness of the outcome. Rather, it should take into account the range of important consequences that can be anticipated and both their probability and importance should be considered. Data series then become the basis for reassessment of these anticipations. By collecting comparative data "before" and "after", causes can supposedly be narrowed down to certain aspects of the intervening period.

Again the difficulty lies in the inferences we make from obtained objective data. We are seldom interested in the information for its own sake, but rather in the fact that it is taken to represent some more abstract phenomenon about which we are in fact interested. There is a big difference between the following two statements: "450 cases of beer are consumed weekly by the 100 adult residents of community", and "the adult population of the community is alcoholic." Obviously, a statistic bearing on alcohol consumption is relevant to what we think about when we refer to some sort of concept of "alcoholism", but the two are by no means identical. This should be kept in mind while reading the following discussion of social indicators of change.

B. Existing Indices:

By far the most often used social indicators have been those relevant to the general quality of life or societal progress. In an attempt to measure whether we are getting any closer to "the good life", concentration has been mainly focused on the positive statistics available. These tend to include such measures as population trends and characteristics, production of goods and services, labour force and employment trends, the measurement of knowledge and technology, changing political support, consumption issues, leisure, health status, distribution of schooling, and human welfare (Sheldon and Moore, 1968). The latter category, human welfare, would seem to be the crucial variable and one which may encompass all of the rest. For this reason, it will be subjected to greater consideration in Section V.

1. Employment

Perhaps, the most important preliminary concern would be in the quantity and quality of employment provided by the new industry. These statistics would hopefully measure the diversity of jobs available, the number of work hours necessary to maintain a subsistence level of survival, how many families require two working parents, and in general what percentage of the work force is employed as a direct or indirect result of the industry. These enquiries are in line with the supposition that if people are employed they have a higher standard of living. The employment percentage index is essentially an economic indicator rather than a social one; there is no evidence to suggest that employment implies happiness. However, a degree of socio-economic security is inherent in employment and it thus merits some consideration. In addition, if further indices can be developed concerning the quality of work as suggested above, the employment indicator may certainly be termed social.

2. Income

Another indicator which essentially follows from the employment percentage is the standard mean income level. An increase in the mean income of a community would suggest a case where industry has benefited the community, at least economically. This may not be the case however, when consideration is given to the remainder of the social picture. For with increased spending power comes increased spending; with the advent of industry comes a greater number of spending outlets. Thus, the great provider becomes a provider in a dual sense: he who giveth and he who taketh away. Witnesss the urban resident in comparison to a northern native: the former oftentimes may find $20,000 per year inadequate while the latter may encounter the same problem with one tenth of this amount. Therefore, it would not be correct to equate a higher mean income with a higher standard of living but rather with a more urbanized standard of living. An appropriate statistic might be the average income adjusted for cost of living differences, availabilities, and aspirations as suggested by Flax (1972) or the median income level (Palys, 1973).

3. Housing

A fairly reliable indicator of economic welfare is the progress reflected in housing standards and conditions. This would include indices of purchase costs, purchasing abilities based on income, improvements in new vs. old residences, household expenditures, and subsidization (if any). Since progesss is what is being measured, the critical concern again is whether housing conditions are improved with the advent of industry. This is of course largely a function of where the residents place their priorities. It might be relevant, therefore, to simply assess the standard of housing which is made available as a direct or indirect result of the Hydro development.

It should be stressed here that these indices by no means represent an exhaustive review of what are being called progress indicators. These examples have been presented mainly to outline the types of measurement which can be considered, because such socio-economic indicators are measureable, and because they have been widely used.

Since the report is mainly concerned with social change and stress, the social indicators applicable to each area are given due consideration, ie., social change or progress indicators presently and stress or problem indicators in the forthcoming discussion on stress. What must be kept in mind throughout is that although there may be heavy concentration on the positive or negative aspects of various indicators, opposite terms also exist and require consideration. For example, when speaking of the rate of unemployment (negative) one cannot ignore the rate of employment (positive). Lest the text become redundant, however, the present report will try to avoid consideration of such dichotomous variables and therefore leave such comparisons up to the reader.

III SOCIAL AND PSYCHOLOGICAL STRESS

Although scientific use of the term stress originated in the physiological study of illness, its generality has since been extended to cover psychologically, socially and culturally induced syndromes. Unlike physiological stress, however, the three latter forms involve causes and manifestations outside the realm of physical stimuli and they are therefore more difficult to identify, measure, and differentiate. Generally speaking, all three types imply a problem in human endeavor and interaction; differences exist only in degree and magnitude. That is, where psychological stress involves an individuals difficulty in coping with the environment, social and cultural stress pertain to institutional and macro-systemic problems respectively. The fact that all three concepts are integrally related can be more clearly discerned if each is conceptualized as a concentric circle as in Figure 1. The present discussion will first deal with psychological stress and then expand the concept to include social and cultural stress. Initially, however, attention will be focused on the derivation of a workable definition in order to lay the groundwork for an eventual integration of the various stress theories.

A STRESS THEORY

If asked for a definition of stress the average layman would probably reply that it is a condition of crisis within a given individual or group of people. Examples might include impending danger, decision conflicts, the wake of a disaster, anxiety, and what not. And despite a great deal of psychological and physiological literature which has been devoted to studying this phenomenon of human existence, the layman would be basically correct. Perhaps the most simple definition and that most similar to the one stated above, has been proposed by the

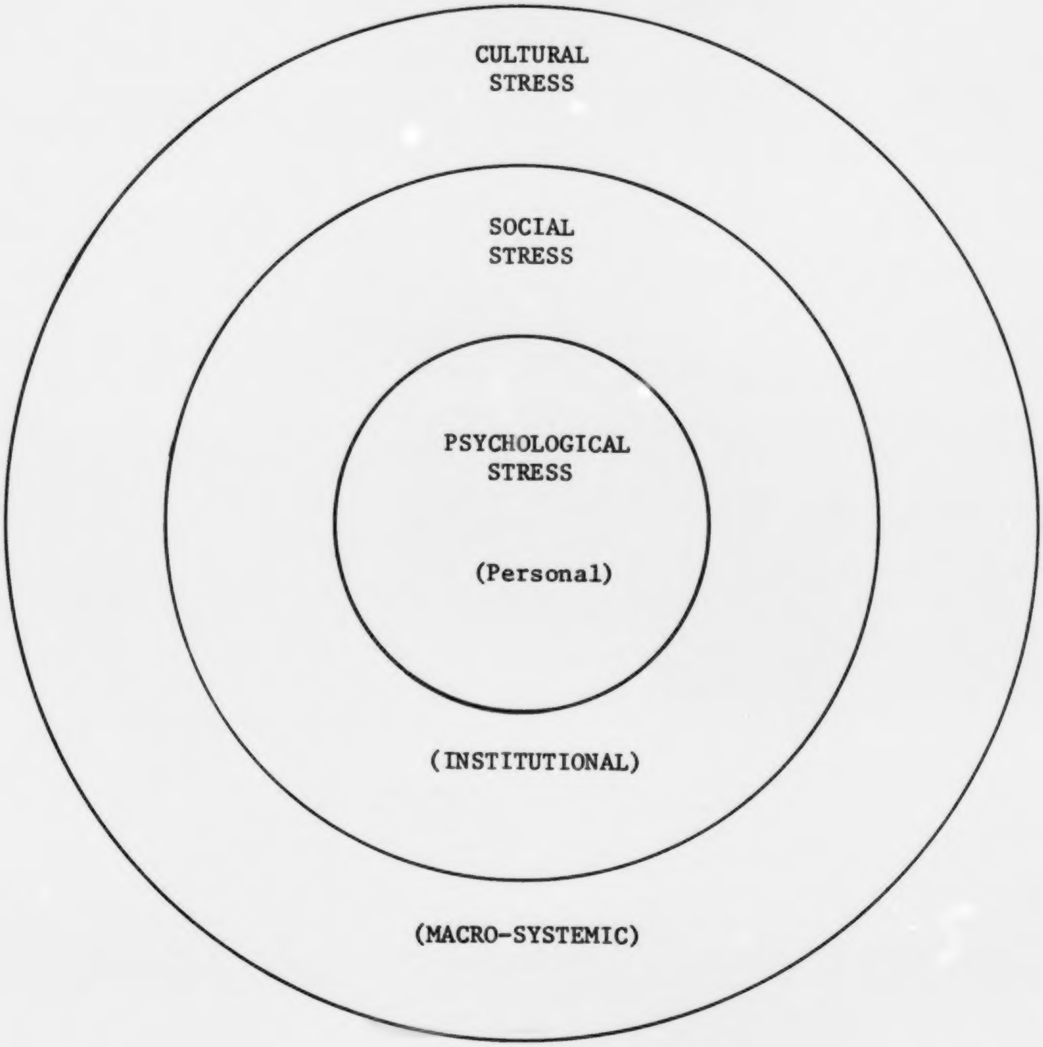
CULTURAL
STRESS
SOCIAL
STRESS
PSYCHOLOGICAL
STRESS
(Personal)
(INSTITUTIONAL)
(MACRO-SYSTEMIC)

Figure 1. The Conceptual Relstionships Between the Three Types of Stress.

unanimously acclaimed "father" of stress research. Hans Selye (1956) has suggested that stress is simply the rate of wear and tear on the body (and mind) caused by life.

1. Response-Based Definitions

Sely's definition, which gave much of the early momentum to the stress research area, was essentially a response definition. In other words, it involves a specification of a class or classes of responses which will be taken as evidence that an organism is, or recently has been, under stress. His notion of a general adaptation syndrome (to stress) essentially was a particular pattern of physiological responses of the organism. Occurrences of response syndrome defined the prior or simultaneous occurrence of stress. The rate of wear and tear is supposedly regulated by the general adaptation syndrome.

The utility of such definitions lies in their subjectibility to measurement. When stress is defined as a response to certain environmental conditions, the response can be measured and inferences can be drawn from this measurement. However, such a definition is extremely restrictive when consideration is given to stress syndrome which are not behaviorally manifested. In addition, the manifestation of a given stress response does not necessarily presuppose the existence of a stressful situation. Finally, the long-term stress responses of say, a community influx, cannot be measured by traditional means, eg., level of anxiety, blood pressure increase, etc.

2. Situation-Based Definitions

A typical definition of this type suggests that stress involves the presence of certain classes of situations or situations constituting specified stimulus properties. Arnold's (1960) definition of stress as any condition that disturbs normal functioning, would fit into this category. Situational definitions of stress have a special appeal since they are not as confining as the response definitions. This in itself may pose a problem; where the response definitions may be overly specific the situational definitions may be too broad.

For example, in psychological analysis, what is normal is very difficult to define. There is also the question of specifying just what kinds of situations, and what properties of them, make for stress. Finally, there is the question of individual differences in response to the same, presumably stressful situation. Problems such as these are quite difficult to measure such that a situation based definition must largely depend on a subjective analysis.

3. Stress as an Environment-Organism Transaction

This class of definitions has by and large become the more accepted approach to studying stress. Its generality is implicit in that consideration is given to situations leading to stress and intra-individual processes involved in coping with stress. Pascal (1951) made the point of defining stress in terms of a perceived environmental situation which threatens the gratification of needs. Although the emphasis here is on individual perception, inclusion of an environmental situation as an essential component is used. The fact that this definition has withstood over two decades of innovative research may lend credence to its validity. Within this period, although slight modifications were offered, definitions of merit tended to follow Pascal's direction.

If we combine the critical features of stress from these various definitions, the following constants emerge: (1) stress is a state of the organism, (2) it involves an interaction between the individual and the environment, (3) it is more extreme than an ordinarily motivated state and may be the same as a state of severe frustration or conflict (Cofer and Appley, 1964), (4) a threat must be present, (5) the threat must somehow be perceived, (6) the integrity of the individual is involved somewhat, and (7) a normal adjustive coping response is not readily available (Cofer and Appley, 1964).

B PERSONALITY AND COGNITIVE VARIABLES

Lazarus (1966, 1967) has attempted to develop a theory which explains stress in terms of personality and cognition. That is, experiencing stress is a function of what kind of person you are and how you interpret different situations. This can account for individual differences in that, what may be stressful for one may not be so for another. The intrinsic processes of this theory are appraisal and coping, ie., interpretation of stress and adjustment to stress. Unlike other theorists, Lazarus (1967) views emotions as being the effects of stress rather than the causes and that these emotions are heavily dependent on cognitive factors. If it is not yet clear as to what is meant by cognition or cognitive factors, this term refers to the psychological events involved in the formation and utilization of symbols and concepts associated with such varied activities as thinking, reasoning and problem-solving (Kendler and Kendler, 1971). Thus, how one interprets a potentially stressful situation is part of the cognitive process.

1. Appraisal

This is the evaluation and judgement of the significance of a stimulus. One of the first people to use this concept in a theory of emotion was Magda Arnold (1960), who proposed a sequential model. The first step in this sequence is perception, in which external stimuli are received. The next step is appraisal, in which the stimuli are judged as good and beneficial or bad and harmful. This appraisal then determines the emotion, which is defined as a positive feeling tendency toward stimuli appraised as good or a negative tendency away from those appraised as bad. Expression of the emotion and action are the final steps in the sequence. These may be organized toward approach or toward withdrawal depending on how pleasant or noxious the stimulus is.

Now if this sounds like nothing more than theoretical jargon, an example may be appropriate. Consider for a moment your average Northern Manitoba resident who is faced with displacement by a Manitoba Hydro project. The news of industrialization corresponds to the perception of stimuli. The resident analyzes the situation (appraisal) and decides that the project is either good or bad. This decision will subsequently lead to either a positive or negative feeling (emotion) toward Manitoba Hydro. Consequently, the resident will express this emotion via "fight or flight". If the emotion is negative but the odds are insurmountable, the resident may withdraw rather than fight the system. Were this the case, the stress will not have been alleviated.

2. Coping

A more complex extension of this approach is that of Lazarus (1968). He postulates two basic kinds of appraisal processes: primary appraisal which evaluates whether the situation is threatening or not, and secondary appraisal, which has to do with alternative ways of coping with a perceived threat. If a situation is perceived as threatening, there are two possible coping strategies: (a) direct action, such as fight or flight, with the negative emotional states accompanying them; or (b) benign appraisal, in which the person reassess the situation as less threatening, thereby reducing the negative emotional state. This entire analysis stresses the interplay between cognitive appraisal and emotional reactions. In general terms it may be said that conditions of psychological stress exist when an individual encounters environmental conditions which he appraises as threatening and, on the basis of a second appraisal process, engages in coping processes designed to reduce or eliminate the threat. The basic elements of this analysis of psychological stress (Lazarus, 1966) are outlined in Table 1.

Within this framework, the case of our previously discussed northern resident would seem to hold more promise. That is, the alternative of action does not have to be the only course of action. When we use the term "coping" we are referring to strategies for dealing with threat. Thus our resident may cope with the impending situation in a number of different ways. For all parties concerned, the route or benign reappraisal would seem most favourable. This does not imply that the resident

TABLE 1

Schematic outline of psychological stress concepts. See text for discussion. Note the inclusion of the term defensive reappraisal in place of the previously used term, benign reappraisal Both are applicable in the present context with defensive reappraisal being the more encompassing term, i.e., including such processes as benign reappraisal, denial, withdrawal, resignation, etc.

ENVIRONMENTAL CONDITIONS ------ PRIMARY APPRAISAL PROCESSES ------ THREAT (ANTICIPATION OF HARM) ------ SECONDARY APPRAISAL PROCESSES ------ COPING PROCESSES

1. Factors in the Environment	1. Degree of Threat	1. Direct Action Tendencies
2. Factors in the Psychological Structure of the Individual	2. Factors in the Environment	2. Defensive Reappraisal
	3. Factors in the Psychological Structure of the Individual	

should interpret the situation as any less threatening by downplaying its impact. What can be done in order to reduce the threat would be the establishment of a mutually beneficial communication network between the displaced and the displacer. This could follow any of a number strategies, e.g. concessions being made by the Hydro project in favour of the resident. If such a meaningful pact could be arranged between the two parties, the situation could be reassessed as less threatening, thereby reducing the negative emotional state.

The research done by Lazarus to test his theory has generally focused on how appraisal and reappraisal are used to cope with extremely threatening situations. In one experiment (Folkins, Lawson, Opton & Lazarus, 1968), people who watched a film depicting unexpected, dramatic, accidents in a workshop, such as an accident in which a man was impaled by a circular saw, showed less physiological arousal, as measured by skin conductance and heart rate, _if_ they had cognitively rehearsed, or imagined the threatening scenes prior to seeing the film. Such results have important implications not only for an intellectual understanding of what stress or emotion is, but for preparation of people who will be subjected to severe stress. Complete information, delivered in well spaced steps, may serve to sensitize or prepare our resident for the events yet to come. If he/she is subtly warned 10 years prior to initial construction, the stress will certainly be more tolerable and more amenable to resolution than if the declaration is made one summer and displacement occurs the next summer.

C SOCIAL STRESS

Up to this point, the discussion of stress has been focused on the psychological processes involved. Where psychological stress can be used to explain the response to the coming of industrialization, the topic of social stress attempts to deal with the transition from backward to industrial society. In other words, what are the relative effects of industrialization once it has arrived.

According to Mechanic (1962), whether or not a situation, event or happening produces discomforting (stress) responses depends upon four factors:

i) the ability and capacity of a person,

ii) skills and limitations produced by group practices and traditions,

iii) the means provided to individuals by the social environment, and

iv) the norms that define where and how an individual may utilize these means.

Bearing these factors in mind, consideration can be given to the societal institutions of work, competition, and social status.

Work becomes stress to the degree to which individuals give it the meaning of stress (Pepitone, 1967). Thus a northern Manitoba native may trap, fish, hunt, chop wood, etc., for a lifetime without ever conceiving of it as stressful. However, put the same native into punch clock slavery, tell him he must work to support his family and pay his taxes, make payment a function of output, and it is likely that this same person will undergo a great deal of stress. The implication is not that the work is more taxing but that the extrinsic demands are. The above criteria would require that meaningful needs be attached to the work being done and that in some way the native's traditional values can be incorporated into the 20th Century work ethic. Given these cushions, stress could be alleviated or at least, minimized.

Competition is widely supposed to be the cause of "nervous breakdowns", psychosomatic illness, character disorders, immature behaviour and other behaviours which implicate stress. The threat which competition poses to traditional Indian communities is a much more real problem and one which has devastating implications. It is by sharing that Indian peoples have survived thus far (Milord, 1970, Chase, 1970); the competitive ethic runs completely counter to this, the foremost doctrine of traditional societies. In competition, the individual is constrained to act self-interestedly and against the interests of others by structural features of his environment, certainly not a precondition for group survival. In modern society, competition is as prevalent as is the institution of work (Gross, 1970) where the secret to success is synonymous with doing better than the next man. If industrialization can be accomplished without the introduction of competition, a precedent will have been set in human engineering, unless of course the due process of industrialization is accepted without the values inherent in it.

Despite anecdotes about harried business executives and unhappy suburban housewives, most people would probably agree that conditions are more stressful for those at the bottom of our society than those nearer the top. With least share in the available resources of society, persons of low status seem virtually guaranteed more than their share of misfortune. Due to the fact that the lower class has less buying power, they may incur such stresses as malnutrition, limited social mobility, poor legal services, etc. Dohrenwend and Dohrenwend (1970) suggest that the prevailing lack of opportunity in the lower class leads to increased marital breakdown, juvenile delinquency, job loss or lay off, poor physical and mental health, and death at an earlier age. Since a large majority of northern Manitoba natives are, at present, unskilled laborers, modernization may simply reinforce this status. If this status is acceptable to the native, there is no stress. If it is unacceptable and stressful, coping can only come about through training for skilled positions.

D CULTURAL INDUCTION OF STRESS

This theoretical area is essentially an all encompassing study of stress caused by a culture in transition. Although it has received, at most, peripheral attention, it may be the most appropriate in consideration of the situation in northern Manitoba. The quasi-model proposed by Opler (1967) attempts to relate a way of life to the efforts of man in coping with change.

The primary emphasis is that the customs, beliefs, practices, artifacts, and values that characterize any culture are not matters of arbitrary choice but rather the products of evolutionary processes in the history of particular peoples coping with particular environmental circumstances.

Second, these constitute fundamental models, with variations among subgroups (eg. Cree, Dog-rib, White), that guide the development of individuals, who learn concepts, skills, values, attitudes, patterns of coping, and self concepts, each individual in interaction with particular circumstances of his unfolding experience. These response repertoires enable individuals to respond with characteristic effectiveness to the accustomed patterns of circumstances for which they have become programmed in the cumulative growth and development interactions between individual and environment.

However, and thirdly, as life circumstances change drastically and sometimes suddenly, accustomed responses may prove ineffectual, required behaviour may conflict with deeply held values, and required roles may conflict with the self concept to a degree that would properly be designated as culturally-induced stress.

A case in point can be extracted from the observations of a well-known explorer, Vilhjalmur Stefansson (1922, cited in Opler, 1967). He has pointed out in his experience that mental illness, alcoholism, and family pathology, which he encountered among Alaskan Eskimos, were virtually absent among the less acculturated Greenland Eskimos during his sojournes in both settings. By using comparative observations such as these and defining stress by reference to these abnormalities, it could be concluded that the mainland Eskimos had undergone or were undergoing a greater amount of psychological, social and cultural stress.

E. Results of Exposure to Stress:

As explained earlier, it has been found that when one is sufficiently forewarned of an upcoming stressful situation, coping is facilitated (Folkins, et al, 1968). This implies that when stress is predictable and/or controllable to some extent, the situation becomes less stressful. This conclusion has been supported by D'Amato and Gumenik (1960) whose data suggest that predictable punishment is less threatening than unpredictable punishment. In the former, the individual knows when to expect the harm even if he/she can do little about it. Such expectation affords a modicum of psychological control over the situation by means of the general adaptation syndrome (Selye, 1956).

Janis (1971) has extended this line of thinking to include various levels of pre-stress fear. He has found that whenever people are exposed to severe stress, those who had been most calm and those who had been most confident about their invulnerability at the outset will tend to become much more upset by the stressful experience than will those who had experienced a moderate level of fear. Apparently, a moderate amount of anticipatory fear about realistic threats is necessary for the development of effective inner defenses for coping with subsequent danger, deprivation, or what not.

When stress is uncontrollable or unpredictable, many behaviours are affected. In the general adaptation syndrome, reference is made to three stages. The first two stages involve programmed and conditioned responses which exist in individuals for purposes of coping with stress. However, when stressors are too intense or uncontrollable, the third stage or stage of exhaustion is reached. Accompanying this stage is a sense of futility in which coping is no longer possible. This phenomenon has been referred to as learned helplessness/hopelessness (Mowrer, 1960; Seligman and Maier, 1967). These researchers and others have demonstrated that repeated exposure to uncontrollable or unpredictable shock eventually leads to total inactivity. That is, when one has no control over stressful events, one learns that any attempt to control such events is futile, and consequently passively submits to the stressor. This withdrawal can be characterized in people by the states of alienation, anomie, and apathy to be discussed later.

IV THE IMPACT OF INDUSTRY ON THE OLD SOCIAL ORDER

A. Family and Kinship:

Wherever any movement toward industrialization occurs, the family system moves toward some kind of "conjugal" pattern, i.e., few kinship ties with distant relatives, and an emphasis on the nuclear family unit of husband and wife with their children (Goode, 1968). Most social analysts, confronted with this phenomenon, have succumbed to the temptation to assume that industrialization is the independent variable and that family change is the dependent one. However, before yielding to this temptation, the problem must be examined more closely.

Many discussions of the impact of industry have tended to lump all kinship structures in non-industrial societies under the single rubric of "extended kinship", in comparison with the "small family" system of urban industrial societies. As previously stated, the principal cause (Moore, 1965) of the breaking of large kinship organizations is the extensive mobility required by industrialization. This mobility is geographical, involving a concomitant physical reparation of kinsmen. It is also social, thus involving the separation of kinsmen in social status and styles of life. Hereditary, ascribed social status is widely superceded by status assignment made on the basis of individual qualities and achievements (Croog, 1970). Despite the justifiable cynicism about the extent of "equality of opportunity" in industrial societies, some intergenerational (e.g. father-son) mobility is essential for the establishment of any industrial system, as well as for the continuous changes in occupational distributions that continuing economic growth requires. The demand that all kinsmen "share and share alike" would set impossible restrictions on an industrial system of labour allocation and mobility. The strain here is in demanding that parents, children and siblings spend years in intimate, affective relations and then, when the children have reached adulthood, treat one another as strangers.

The minimization of parental control has a number of implications for the internal structure of the family. If children are to achieve adult independence, the authority of the father during childhood will be diminished. Since schools provide a leading agency of social sorting that is largely independent of the family, children tend to gain an independent status in school. Indeed, the expansion of knowledge and the growth of specialization lead to the situation in which the child knows more than his father about some or many things. The young are, in any event, much more likely than the adults to accept novel norms and forms, and thus to challenge the traditional basis of parental authority. Coupled with the invariable absence of the father, the authority of the mother within the family is likely to increase. In running the household, the mother becomes a more dominant figure in the rearing of a child at the same time impairing male dominance.

One related problem engendered by industrialization is the rise of family disorganization. Of course, if family organization is judged by the traditional standard, the changes made in response to industrialization represent disorganization by definition. By the same token, the persistence of traditional practices may be regarded as anti-social by new standards. However , deviance from old norms does not automatically involve the development and acceptance of new ones. The loss of traditional controls may result in promiscuity and irregular unions that are contrary to any established order. The reduction of parental authority may simply lead the children to delinquent conduct rather than to self-directed responsible behaviour. With no social control outside the immediate family and the changing roles of husband and wife, a great increase in marital conflict may result (Moore, 1965). Although none of these are scientifically determined cause-effect relationships, they can be viewed as instances of the family as a source of stress.

B. Community Organization and Social Control:

1. Dependence

Whether the location of industry is a long established town or city, or a rural and possibly uninhabited area, problems in industry-community relations immediately arise (Lucas, 1971). Industry presumably provides new avenues of employment and new sources of revenue, both public and private. It may also supply leaders who are capable of supplementing or challenging the leaders in existing communities, and who are almost certain to be major influences in the life of the new communities. Some types of production involve difficulties like air and water pollution, noise, unslightly wastes, and various hazards to life and health. The dependence of a community on industry varies according to the relative size and the simplicity or diversity of the economic structure. Yet, once new productive facilities have been established, the community is extremely reluctant to give up the economic advantages of their continuation.

This transition from independence to dependence may in itself be stressful to the individuals involved. When one must discard old norms and adopt new ones, a conflict of values can result. Values are built-in codes of conduct and awareness that are an integral part of all people. They are developed from birth and throughout life are reinforced by one's peers, one's elders and one's culture. If new values are suddenly superimposed on this old structure, a decision of acceptance is required, i.e., one set must be rejected in favour of the other. Since old values will not be acceptable within a new culture, the individual is forced to adopt a new set of values. However, these new values may run completely counter to those held before, e.g., competition vs. co-operation as previously discussed. Thus conflict exists. In the case of a community which has been accustomed to interdependence among its members but autonomy within the individual, difficulty will certainly arise in adapting to a new value system of dependence on industry. A conflict of this magnitude implies a great deal of stress (Cofer and Appley, 1964).

Intrinsically related to value conflicts is the loss of emotional security. As previously discussed, emotions are what you make them. In other words, they depend on our perception and interpretation of environmental stimuli. When predictable stimuli are present, a predictable emotion is forthcoming. However, when our environment becomes unpredictable, emotional responses no longer are a function of situational cues (Schacter and Singer, 1962) but rather are experienced without a great deal of certainty as to whether they are appropriate or not. For example, in many cultures a funeral is accompanied by mourning, whereas in others it is not treated as an extraordinarily gloomy occurence. In imposing the one on the other, laughing at a funeral might become a punishable act. This results in a loss of emotional security between a man, his emotions, and his values. This insecurity is stressful.

Characteristic of conflict and insecurity is a state referred to as anxiety (Leavitt, 1967). People suffering from anxiety reaction usually complain of a general nervousness and a high degree of tension. They act fearful but cannot point to specific reasons for their fear; they are unaware of the cue that arouses the anxiety. The dividing line between fear and anxiety is obviously not sharp. Psychological analysis suggests that anxiety is a blind apprehension and fear; the anxious person is unable to say what it is he fears (Spielberger, 1966). In the present case, it can result from the overall uncertainty experienced with the coming of modernity. As should be clear at this point, a break with the past involves the incorporation of a great number of unstated norms which require definition. Until they are defined, an anxious uncertainty prevails, a stressful anxiety.

2. Deindividuation

As suggested by Moore (1965), the small industrial town may become essentially an enclave within a predominantly nonindustrial environment. If most of the labour force is recruited locally, many nonindustrial social patterns may persist. Whether or not this will be the case in northern Manitoba has yet to be determined. Nonetheless, with the advent of any industrial project, a process of deindividuation persists. This is the process whereby the human merits of an individual are replaced by technical merits which tend to place an emphasis on categories rather than people. For example, John Smith - human being is transformed into labourer - four o'clock shift. This may be viewed as a normal requisite for existence in any society, a point which cannot be denied. The point can be made, however, that such a process is degrading, especially were it to be applied to people unfamiliar with such a system.

When people are categorized as such, they experience a gradual loss of identity (Klapp, 1969). When all the symbols of the old value system have been destroyed or replaced, people must embark on a search for some kind of new identity. Such a collective identity search is symptomatic of the fact that some modern social systems deprive people of psychological payoffs, the lack of which, expressed by terms such as alienation, meaninglessness, identity problem, etc., motivates a mass groping for activities and symbols with which to restore or find new identity. Since identification today is based largely on material possessions rather than human qualities, such a route may be opted for by the identity seekers. Regardless of the method, a search for identity involves the attempt to establish a meaningful relationship with some symbol, be it drink, sexual exploitation, money or whatever.

Those who cannot reconcile themselves with a new social order may become alienated from society. Probably the rock bottom requirement for the social fabric to hold together is that a person appreciate his own options and his own place in society. Such an appreciation gives one a reason to accept norms and rules that do not confer immediate personal advantage. When this condition is not met for a sufficient number of persons, there is a widespread social chaos, and pervasive identity confusion and alienation (Davis, 1970). This is a situation in which too few people appreciate what the society actually does have to offer them, and in which society, to some extent, offers bitterly conflicting values and social practices. And it is just this situation which demonstrates the relationship of alienation and commitment to each other and to a way of life. To be alienated from one's way of life is to go through the motions of participating in some (or all) of its practices while seeing no meaning or value in them. For example, the individual gets a job and works, not because work is a human good containing the possibility of self-realization, productivity, and service to others, but simply because he must live. The commitments normally associated with one's work are nonexistent, or they are held only mechanically. Alienation is, therefore, a distinctive kind of identity confusion that has its roots jointly in the individual's experience and capacities and in the society's structuring of his experience and opportunities (Davis, 1970).

Keniston (1965) suggests that alienation may be more of a violent protest than mere noncommital, i.e., the rejection of the roles, values, and institutions of a society. In addition, he presents a number of rather vague solutions for the reconstruction of commitment. First, we need a more generous tolerance for innovative and constructive ideas, we being the alienated. Oftentimes when protest occurs, the baby is thrown out along with the bathwater. The second responsibility rests on the society, i.e., that it periodically reassess the feelings and desires of the people. If the majority of the populace is dissatisfied with a certain practice or institution it is the responsibility of the powers that be to change it. For that matter, even if only a few are discontented, an allowance should be made for such input. Finally, the onus falls on the alienated individual to speak his protest rather than malign the system. The problem with this suggestion is that the alienated are oftentimes so disoriented and disillusioned that verbalization of the problem is nigh impossible.

Two somewhat related disorderly states of confusion that have become associated with rapid social and economic change are _anomie_ and _apathy_. To the degree that people come to cherish values and strive for goals that are not in fact open to them (or in the case of values, are not adhered to by those in power in the new social order), one has the conditions for anomie - a sense of social chaos and individual confusion of self and values (Durkheim, 1951). Durkheim postulates that sudden prosperity increases aspirations beyond the likelihood of fulfillment, and that this may lead to the rejection of the new regulations or controls that are required. The difference between anomie and alienation, however, exists in its consequences; Durkheim (1951) has linked anomie first to severe depression and eventually to suicide.

Apathy involves neither the rejection of norms nor a sense of chaos. In fact, it has very few implications. When thrown into conditions of rapid change and novelty, when one becomes overstimulated, the usual response is total withdrawal, tuning out the world so to speak. This is apathy (Toffler, 1970). In studies of people who have been required to adapt rapidly and repeatedly to unpredictable stimuli, it has been found that a point is reached where passive submission is the only recourse (e.g. Gunderson, 1963). First, evidences of distortion of reality, confusion, and disorientation are observed. Second, there are signs of fatigue, anxiety, tenseness, or extreme irritability. Third, in all cases there appears to be a point of no return - a point at which apathy and withdrawal set in. This can be viewed as the final stage of exhaustion in the stress paradigm.

3. Decline of Informal Social Controls

The very impersonality of an industrial society may lead the individual to reject accepted standards of conduct (Moore, 1965). Characteristics of this urban anonymity is the large number of transitory or secondary relationships between members of the society, e.g., employer-employee, the teacher and the parent, the public official and the citizen, the landlord and the tenant, the buyers and the seller, etc. Within these relationships we find a prevalence of reduced personal responsibility. For example, the retailer and the housewife may interact on a daily basis, but the responsibilities of one to the other are extremely limited. However, when a great number of these ethereal relationships abound, the personal responsibilities of housewife to community and family are decreased.

In these circumstances, the maintenance of primary or informal social controls is difficult and occasionally impossible, (Moore, 1965). In a "normal" social structure, social codes are internalized early and are constantly reinforced by rewards and punishments (approval and disapproval) from significant others. Without the support of family and friends for maintaining moral conduct, and faced with all sorts of conflicting standards and many opportunities for anonymous transgression, the individual may well become a social deviant.

The counterpart of the possible decline of informal social controls and the greater opportunities for deviant behaviour is the growth of formal controls in cities. Arrests by the police are substituted for scolding and gossip. At the extreme, the lack of any apparent common value basis of conduct result in austere, impersonal disapproval of behaviour, but not in moral outrage; personal responsibility for maintaining order and decency is radically reduced.

C. Social Differentiation and Inequality:

Industrialization inevitably provides a new set of social positions and new criteria of social placement and valuation. At the very least, therefore, it must result in a more complex system of social differentiation. More commonly, as touched on earlier, it gives rise to competing systems of stratification, since its criteria of placement and valuation contrast sharply with traditional modes of assigning status, power, and prestige (Tumin, 1960).

During early industrialization, few and sharp distinctions in social status emerge. During this stage, the differences in social origin, education, and power of managers and workers are likely to be the widest. The lack of competition among employers may give the workers no opportunities for improving their situation and the fundamental fact of a radical disparity in social position is the result. As industrialization advances, the skills of manual workers become more differentiated, and still more kinds of managers, technicians, and professionals are added to the productive organization. These developments multiply the ranks based on position in the occupational structure such that status allocation becomes a function of income, occupational position, affiliation group, etc. And what has been traditional in industrializing societies is that the natives of the area become the unskilled labour force and consequently occupy the lowest rung on the status ladder (Smelser, 1968). That northern Manitoba communities would deviate from this standard would certainly be beyond reasonable expectations.

When one is allocated to the lower social niches, one no longer has the freedom of social movement which had formerly been a part of every day existence. Certain groups and institutions suddenly become off-limits, as if they belong to someone else. Consequently, groups begin to view each others as belonging to separate social entities, between which psychological and social barriers are constructed. This is discrimination; it is a mutual unwritten exclusion of certain parties from certain group practices or activites. Thus, when a lower class family's house beings to deteriorate, or as the father starts to drink heavily, or the daughter becomes illegitimately pregnant, the problems are invariably attributed to the persons involved including their ignorance, way of life, etc. This is what Ryan (1971) refers to as blaming the victim. Instead of attributing the problem to social factors like discrimination or status allocation, the outside "haves" place the fault on the instrument of decay, the man, his family, or his social class.

Such a state of affairs could justifiably be interpreted as frustrating. Frustration is a state in which no outlet is provided for a given need and when attempts are made to satisfy this need, they are thwarted (Cofer and Appley, 1964). A common labourer or unskilled worker may not be promoted because he lacks the required qualifications. The question to be asked here is whether he is being discriminated against or whether he is being logically denied. Since training in the required skills might not be available to him within the community and/or industrial complex, it can be seen that the dual process of deprivation and thwarting have occurred, the necessary conditions for frustration.

Frustration may give rise to a variety of response patterns including aggression, repression and regression (Cofer and Appley, 1964). The two latter responses have essentially been dealt with in the discussion of alienation, apathy, and anomie. However, the response which carries with it the most devastating social implications, and which has received the greatest amount of empirical support is aggression. It has been repeatedly demonstrated (See Janis, 1971) in psychological experiments that when a person is frustrated, he/she develops an aggressive tendency towards either the frustrator or some other neutral object (scapegoat). Janis (1971) has suggested that the probability that members of one group will become hostile toward a rival group will be increased if the rivals are seen as:

i) responsible for a current source of frustration,

ii) too weak and too lacking in support from any powerful allies to mobilize effective retaliation, and/or

iii) morally reprehensible in the eyes of other people, so that inflicting punishment will be morally justified and will lead to little or no disapproval from onlookers.

This hostility or aggression becomes socially relevant when consideration is given to the social pathologies such as delinquency, robbery, and arson, topics which will be dealt with more fully in the section on social indicators.

D. Religious Organizations and Beliefs:

Possibly the most outstanding effect that industrialization has on religious organization and belief is secularization (Moore, 1965). At the extreme, secularization involves an active rejection of traditional religion, though not infrequently the process involves the substitution of a new set of essentially religious beliefs, such as catholicism, for the old ones (Talmon, 1962). In its less extreme forms, secularization involves a reduction of religious control over everyday life, the possible growth of agnostic positions toward unwritten doctrines, and the substitution of rational for ritual action. A gradual secularization may be taken as the "normal" effect of economic modernization on religion, with perhaps many isolated skirmishes involving frontal attacks on the religious establishment and many more instances of quiet abandonment of religious beliefs and practices.

Depending on the state of religion in northern Manitoba one might be able to generalize from other systems which have undergone social change. Religion in this sense is not necessarily a formal structure but rather an informal social control, which complements those discussed earlier. It involves common beliefs of moral conduct and is the general contrivance for supernatural and unexplainable phenomena. As new forms of social activity appear and the close integration between religion and other elements of traditional social organization declines, the religious structure ceases to pervade the life of the community and becomes a special interest association. Witness the distinction between modern and premodern societies; in America man takes part in his religion while in India a man's life is his religion. In one society, religion and life are dichotomously separated; in the other, they are both integrally unified, ie., one is nothing without the other.

Aside from secularization in terms of expansion of social institutions or outlets, religion faces its most potent challenge in the form of science. Science has no significance for religious beliefs of a strictly supernatural character such as the metaphysical meaning of existence and beliefs in immortality. On the other hand, most religious systems provide supernatural explanations for empirical events, and claim that supernatural powers may be used to alter the course of such events. When this abstract faith in human and superhuman power and destiny is confronted by a concrete emphasis on rational prediction and control, conflict ensues. The eventual outcome of this clash depends on the availability of observable evidence; science invariably generates such evidence.

Science may have no enlightenment to offer about the nature of heaven - but it can teach about what causes weather, about the way of getting more nutritious foods, and about why electric currents are conducted. Religion cannot purport to answer such questions. Consequently, people have a tendency to accept that which is explicable, ie., "seeing is believing".

V SOCIAL INDICATORS OF STRESS

Having concluded that the impact of industry includes a number of deleterious or stressful effects, we may now return to the task of monitoring the impact of social change by means of appropriate social indicators. Brief consideration was given earlier to some of the standard positive indicators of social change; when measuring stress, however, attention must be focused on the not-so-standard negative indices.

A. Problems

As noted previously, social indicators have by and large been primarily focused on the measurement of progress. A notable exception to this norm was a study conducted by Flax (1972). In that report, consideration was given to both positive and negative aspects of urban living. In the latter category were included such indices as unemployment, poverty, mental disorder, public disorder, and social disintegration. These were respectively measured by percent of labour force unemployed, percent of households with incomes less than $3,000 per year, reported suicides per 100,000 population, reported robberies per 100,000 population, and estimates of numbers of narcotic addicts per 10,000 population. Statistics such as these are useful not only reflecting the conditions of a given society but also in assessing the impact of some significant change. Of course the validity of any conclusions derived in the latter assessment would necessitate some form of comparative statistics, i.e., before and after.

1. Unemployment

Unemployment figures are universally thought to have negative connotations. They are generally taken to be reflective of a nation's or community's inability to take care of its population. What may be more informative in the present context is an index of the amount of jobs made available but which were not sought, or which were tried and then left. This would enable those concerned to draw some inferences about the quality of work, the dissatisfaction with employment standards, the employer-employee relationship and what not. The rate of unemployment could also tell us something about the economic standards set and accepted by the original residents of the community. Finally, this index may be helpful in assessing the amount of leisure time made available to the unemployed, time which may be spent drinking beer, or in extreme cases engaging in criminal acts. When a fairly stable rate of unemployment is known, public officials can then take the next step by designing a social intervention scheme meant to provide alternative forms of employment if desired or more socially acceptable activities.

2. Alcohol and Drug Abuse

Alcoholism is a term which is all too often interchangeably with alcohol abuse. The latter term might be more appropriate in the present context although prolonged alcohol abuse is the only necessary antecedent of alcoholism. The same prinicple holds true for drug abuse. These two activities make the consumer's life temporarily less difficult to face; thus it provides an escape that becomes increasingly tempting the more it is used as unsolved problems accumulate and new ones are created by the drinking itself. Despite its long-term maladaptiveness, the pattern is maintained because it is reinforced by short-term relief (Zimbardo and Ruch, 1971). The characteristics typically associated with such disorders are low self-esteem, minimal tolerance for frustration, marked dependency, and a great difficulty in relating to other people, coupled with a supersensitivity about being rejected by others (Chafetz, 1970). It would be quite difficult to quantify incidences of alcoholism or drug abuse, but less clearly defining alternatives are available. Quantity of alcohol consumption is a starter; medical help sought in connection with abuse is another. Reports of illegal use of drugs is a third. Of note here is that despite the scarcity of drug access in the north at present, its prevalence in the south can be transferred via migrating workers.

3. Welfare

Public assistance or welfare programs bear the brunt of the unemployed labour force. Welfare indicators provide information not only on the percentage of the work force which is unemployed but also on the percentage of white versus non-white, male versus female, skilled versus unskilled, voluntary versus involuntary, and resident versus non-resident people in the public payroll. Although this may be taken to represent a facet of economic stress, there are a number of social implications as well, e.g., discrimination, inequality, personality strife, etc. Welfare indeed may be social good in some cases; it provides a living allowance for those who are unable to work in industry or are unneeded by industry (referring here to the entire industrial complex, e.g., stores, railroad, school, etc.). However, it has been suggested that if it is to actually provide for the "welfare" of its recipients, the stipend must certainly be increased so as to provide a liveable standard.

4. Suicide

A person who commits suicide believes that there are only two ways for him to be: the way he is now or dead. The way he is now is unbearable and he takes the only other alternative he sees. Suicide has traditionally been defined as an aggressive act directed against oneself, intended to cause death. Teele (1970) has suggested that some of the possible sources of stress leading to suicide are poor social relationships, lack of group cohesiveness, status displeasure, and role conflicts. In addition, suicidal persons have a feeling that their life is a burden for someone else, a feeling of isolation - of extreme separateness from others, and feelings of hostility and aggression directed toward themselves (Wold, 1970). The single most outstanding characteristic of those who attempt suicide is depression, oftentimes compounded with the problem of chronic alcoholism (Wold, 1970). Indicators of suicide are self-explanatory; a record of attempts would also be most useful.

5. Crime

Robert Fogelson (1971) has devoted an entire text to the study of violence as a protest rather than as a personality variable or way of life. Focusing mainly on the racial riots of the 1960's, he suggests that such violence was an articulate protest against genuine grievances in the black ghettos. The riots were protests because they were attempts to call the attention of white society to the blacks' widespread dissatisfaction with racial subordination and segregation. The riots were also articulate because they were restrained, selective, and directed at the sources of the blacks' most immediate and profound grievances, i.e., stores which charged excessive prices and/or sold inferior goods were burned while homes, schools and churches were left unharmed. Although this involves only one specific stressful situation, reserved generalization can still be made to similar cases of material crimes, especially property violations. The case can be extended to thievery as well if one considers the thief's often stated position: "I steal from him (an institution) because he steals from me (by his pricing and his monopolies).

A disease model of crime, suicide, and even of urban disorders is often preferred by society because it focuses upon the deficits of the criminal or the rioter and not upon those of the social system. Accordingly, it calls for changes in those "afflicted" by the pathology, as opposed to changes in the more pervasive institutions and practices of society. (Szasz (1961) and Teele (1970) are only two of those who have made this point. It is understandable for example, that many whites prefer to view the rioter as "sick" rather than accept the interpretation of the Kerner Commission, which pointed to white racism and institutional bigotry as the sources of intolerable stress focused on blacks in America. The use of the stress concept, indeed, is that it helps to clarify the link between the institutional or social order and the pathology or deviance.

Unfortunately, no means has yet been developed to directly measure the problems inherent in the social order. On the other hand, traditional procedures can be relied on to measure the incidence of deviance. This latter can be accomplished simply by recording the number of robberies, property violations, etc. These incidences can then be correlated with rising prices, acts of intolerance, discriminative practices, etc., of the institutions in question. Interpersonal crimes such as assault, battery, murder, repeated child abuses, etc., can be compared with reported personal disputes, family conditions, and what not. If this procedure is impossible to accomplish, total reliance must be placed on the crime statistics themselves. Although no direct inferences can be drawn from these, comparisons of before and after data may be useful. The problem of delinquency can be indexed in the same fashion.

6. Mental Disorder

Szasz (1961) has argued forcefully that the "myth of mental illness" obscures the true nature of deviant behaviour; such behaviour is simply the person's attempt to solve a problem in living. This attempted solution, however, may clash with others' interests and result in the person being labelled "sick." This explanation has become an accepted tenet in recent years and is therefore the point of emphasis here. If indeed mental disorders are comprised of psychological responses to stress, a statistic reflecting any change in the number of diagnosed disorders proportional to the change in population might well be a valuable social indicator of stress. This again may be difficult to assess; traditionally such disorders in isolated communities have gone undiagnosed and untreated. Recently, since that time, however, the importance of mental health has approached the emphasis placed on physical health and the prominance and instrumentality of the community psychologist has risen accordingly. In fact, it has now become passé to distinguish between the importance of mental and physical health; a sound body is of little use without psychological stability. It would, therefore, be essential that if medical facilities are made available to the community, psychological services be provided as well.

7. Familial Strife

The incidence of marital breakdowns could be assessed in the same manner, possibly through the combined resources of psychologist, clergyman, and doctor. As repeatedly mentioned earlier, the most encompassing concomitant of industrial change is the great increase in social mobility. In the present context, this would include the increasing formation of secondary relationships with various individuals and institutions and the consequently decreasing attention and responsibility given to the family unit. This type of social separation may result in repeated readjustments, breakdown in communication, familial strife, and eventual marital breakdown (Lambert, 1974). Again it might be pointed out that although this may not be a common syndrome in northern communities at present, the introduction of outsiders from diverse backgrounds may ensure its commonality.

B. Conclusion

The major weakness of the social indicators described above is their lack of validity and reliability. In other words, can the conclusion be justifiably drawn that these social indicators represent actual responses to social and psychological stress? Or do they simply reflect an increasing pathological trend which presently pervades the entire world? Perhaps most of the crimes, suicides, alcohol and drug abuse, mental disorders, etc., involve the transplanted workers from the south, the outsiders. Perhaps a majority of the robberies committed involve a store which had previously been absent from the area thus providing no incentive to steal. These are certainly plausible considerations and therefore cannot be excluded from the analysis.

However, it must be agreed, these indicators are at least a general overview of the human welfare of a community. Taken combinatorially, they may be even more valuable. Landa, (1969), with regard to the forced flooding of Cedar Lake and subsequent relocation at Easterville, sums it up quite well in suggesting that while the socially disruptive behaviour evident in Easterville (delinquency, alcoholism, crime) could not be attributed directly to the relocation of the community, the evidence of local testimony indicated that the occurrence of such behaviour had increased considerably since the relocation. If indeed as Legasse (1959), as well as this report has suggested, that this type of behaviour is a response to stress, then it is reasonable to attribute much of the maladaptive or dysfunctional behaviour evident at Easterville to the stresser brought about by the social and physical dislocation experienced by the Cedar Lake people in the course of their relocation. The lack of comparative statistics collected prior to the relocation was again singled out as a problem in drawing such inferences.

C. Alternative Methods

Despite the great inroads which have been made in an attempt to develop a reliable set of social indicators, the validity of the data remains somewhat questionable. For in striving to be objective in the collection of data supposedly relevant to human welfare, a great deal of subjective information has been lost or overlooked. What seems to be required, therefore, is a system of measurement which is capable of assessing the unobservable conditions of human existence. Because it is common knowledge that no two individuals react exactly the same in a given situation, it is essential that some means of indexing individual differences be developed.

The sentiments expressed by Palys (1973) are quite appropriate in this regard. His point that we are dealing with human beings rather than uncultivated masses is extremely well taken and perhaps the crux of the present study. It is therefore in the best interests of the present endeavour to follow the lead which he has proposed. This in essence is a systematic monitoring of social concerns rather than social actions; instead of relying solely on behavioural indicators, consideration must be given to attitudes and feelings as well. For although stress often leads to antisocial acts as previously discussed, this is not always the case. Oftentimes an outlet is not provided for stress and frustration and as a result it builds up within the individual. Or perhaps an individual believes that deviant behaviour is unjustifiable and therefore "keeps his problems to himself." These problems are of critical concern to the success of a community and sooner or later must be voiced and/or recorded. This can be accomplished by means of an attitude inventory designed to determine residents' feelings about the following social concerns: quality and availability of health care, educational standards and conditions, quality of working life and career opportunities, command over goods and services, time and leisure, housing conditions, personal safety and the administration of justice, and social opportunity and participation (Palys, 1973) to name just a few. To these can be added expressed content/discontent with social change, attitudes toward promiscuity and alcohol consumption, feelings of alienation and insecurity, etc. If these values and attitides can be delineated before and after "the change," a basis can be established for the effects of change on social and psychological stress.

The progress which is presently being made in the north in this regard by the social and economic impact study team is an example of what is needed. The implementation of such a survey might well provide the instrumental directives required to proceed with modernization. Despite the inevitability of modernization, such directives, if acted upon, may well serve to alleviate stress or at least make it easier to bear. Three somewhat related surveys, although not specifically concerned with the alleviation of stress, have been conducted to investigate the stress of northern living (Nickel and Kehoe, 1972), reasons for migration and job satisfaction (Matthasson, 1971) and community satisfaction and person-value alienation (Jackson and Poushinsky, 1971). The relative successes of these studies may be methodological implications for the present area.

VI HISTORICAL EXAMPLES IN NORTH AMERICA

A. Federal Intervention: The Case of TVA

During the 1930's while the Appalachian highlands of the eastern United States were suffering more than the rest of the depression ridden country, a plan of mammoth proportions was presented, accepted and embarked on by the federal government. This plan essentially called for the construction of a number of dams and hydroelectric power plants on the rivers in eastern Tennessee Valley with the purpose of producing power, upgrading living standards, providing employment, and basically transforming the Tennessee countryside from a mass rural slum into a 20th century habitation. The program was initially funded by the federal government and eventually passed on to private enterprise, with eventual pay-offs being filtered back into the government to cover the initial investment. The Tennessee Valley Authority (TVA) as it has come to be called, in recent years has become the nation's largest single producer of electric power, generating about 10 percent of the power produced in the country (Wolf, 1967).

The achievement of TVA in improving the social and economic welfare of the people in the Tennessee Valley region and the nation through regional resource development have become known and extolled throughout the world (Robock, 1967). There is adequate objective evidence to show that TVA has been a highly productive investment of federal funds, that the benefits to the nation have far exceeded the costs, and that the project has made a major contribution toward accelerating the development of the Tennessee Valley region. However, these benefits apply strictly to the economic welfare of the region and ignore the social repercussions which may have resulted from such a herculian industrialization scheme.

Robock (1967) suggests three reasons for the dearth of the information regarding the social effects of TVA. Since the present plan in northern Manitoba resembles the TVA project insofar as flooding, relocation and upgrading are concerned, these hypotheses may be noteworthy. The first and most important reason for this shortcoming, according to Robock, may be found in the primitive state of the arts for evaluation research in the social science field. In the 1930's, the available theoretical work on social development was quite unsatisfactory and evaluation techniques were poor. In large part, the primitive state of the arts reflected a serious lag on the part of social scientists in becoming interested in development problems. It also reflected a public policy failure to provide strong incentives for attracting social scientists to this type of work.

Another explanation offered pertains to the confusion that exists between cost-benefit studies and operationally oriented evaluation research (as discussed in social indicators section). The emphasis on cost-benefit techniques arises from a unique institutional situation in the U.S. where of utmost importance is whether the benefits of a project are in excess of the estimated costs. Cost-benefit studies can assist in social evaluation because they attempt to identify specific results from specific programs. But evaluation studies, as previously emphasized, must go far beyond this step. For example, a cost-benefit study would be interested in the mean income provided by an industry, a statistic which can easily be monitored by inspection of the accounting file. An evaluation study would go far beyond this step in delving into the sentiments of relocated families and measuring social phenomena (eg. robberies) after the completion of the project.

A third explanation may lie within the frequently stormy history of the Tennessee Valley Authority itself. In its early months, TVA had many social scientists on its staff. But very soon the planning of the physical facilities began to occupy more of the energy and time of management personnel than did the broader social considerations. This happened partly because the construction program was demanding of energy and time and partly because the directors found it easier to agree on engineering and economic matters than on social considerations; thus, the absence of stated consequences and social indicators. The two latter explanations, however, should provide a clear warning that such occurrences are commonplace in industrialization and should therefore be strictly avoided.

B. B. C. Hydro and Provincial Affairs

The flooding of the Arrow Lakes in the taming of the Columbia River is another case in point similar to the TVA project. However, this more recent effort by B.C. Hydro seems to have been a great improvement in social relations over the more dogmatic procedures used by TVA. Great care was taken to provide displaced families with comprehensive information about the purpose and needs of a project of this sort. Granted, the program was planned to go through regardless of any intervening circumstances. Its implementation, however, was concerned with resident attitudes and provided compensation accordingly.

Unlike the TVA, this project did conduct a follow-up study with the purpose of assessing the human effects of relocation. To find out the feelings of the residents, Wilson (1973) carried out a survey in June 1970 among the relocated families in the Central Arrow Lakes. This was originally intended to be done by personal interviews, but time limitations (as always) made this impossible and the questionnaire had to be mailed to every household with an appropriate covering letter. This yielded 40 replies out of 100 cases, a relatively good response to such an approach but not necessarily one which could be generalized.

Briefly, the survey asked for the respondents feelings about the adequacy of their compensation and the fairness of the compensation program as between different people. It then asked in some detail for feelings about the "new" Central Arrow Lakes area and the resettlement communities and their houses.

A brief run through the responses to the various enquiries may provide some predicted outcomes pertinent to the area under consideration in the present study, depending on the comparability of the two. Bear in mind that these responses represent only 40% of the affected population. The questions of critical concern to the B.C. study were those having to do with compensation satisfaction;dissatisfaction and the fairness of the various compensations to different families as compared to the respondent. It was found that slightly more people were satisfied than dissatisfied with their compensation but the majority (80%) thought the allocations were unfairly divided.

General attitudes about their region indicated overall satisfaction with roads, ferries, work travel on lakes and the region as a whole. However, residents were disappointed with recreation on the lakes, economic outlook, schools, and regional appearances. Favourable responses were obtained in regard to community services, facilities, activities, convenience for work, friendliness, good value for taxes and the community as a whole. When asked whether the property taxes were tolerable, however, over 60% responded unfavourably. This may be related to the expressed attitudes concerning the regional economic outlook. Finally, however, houses, house costs, and good value for costs were thought to be quite favourable.

All in all, it would seem that the project was a social and economic success. The relatively few unfavourable responses could certainly be rectified by the implementation of desired changes in consultation with all residents. This ever present line of communication between industry and community may well have been the eventual secret of success. This situation has an analogy in the molding of steel: when one tries to bend steel, one is met with strength and resistence, but when heat is applied, the task is facilitated. In this case, heat would be analogous to compromises made by B.C. Hydro. In this way, stress is avoided and residents are satisfied. What comes to mind in afterthought is that we (the industry) are infringing upon, even depriving the residents of something which is rightfully theirs. The only way in which this case can be ethically accomplished is by fully satisfying the residents being displaced. Thus, a mutually rewarding pact is made - industry gets the land and the residents get substantial compensation.

A point which may be relevant to the B.C. Hydro project is that the social evaluation which was undertaken was conducted by an employee of the organization. Robock (1967) suggests that there is an inevitable bias that comes from being part of the activity being evaluated since there is an understandable reluctance to discover failures. Wilson (1973) attests to this fact but suggests that with this problem in mind, the study had been conducted.

Therefore, the only criticism which could be levelled is that some of the problem areas may have been skirted or overshadowed by the presentation of positive data.

C. Private Enterprise and Change

The potash mine which was developed in Esterhazy, Saskatchewan in the late 1950's has brought numerous benefits to the community (Willmott, 1962). Most of the mine's labour force of several hundred people has been locally recruited. Jobs have thus been created, not only for company employees, but also for the many persons in other occupations needed to provide services for the new labour force. Many young people who would otherwise have had to leave are presently finding well-paid employment in the community. The town population has increased rapidly. Higher wages and a larger number of people employed have led to considerable business expansion and private home building in Esterhazy and in nearby towns and villages. Community recreational facilities and voluntary associations have shown considerable development and expansion. In short, the populace view the industry as the key to economic survival of the community and as a result have established a satisfactory working relationship.

Problems created by the industry seemed to center around two main concerns: interpersonal difficulties and the pace of development. During the first few years of mine construction, many of the newcomers were transients who came from larger centers with a higher standard of living and better developed public services. Many of them were quite dissatisfied with life in Esterhazy, even though they lived in a newly developed, well-serviced section of town. Prejudices and stereotypes grew up between them and the townspeople, and conflict occurred with regard to teaching methods and other conditions at school. Although most people did not feel that these initial differences were serious, the friction involved caused considerable unhappiness for some. These indicators were collected by a member of Willmott's (1962) research team who spent an entire year in Esterhazy as a resident.

Apparently more serious were the problems involved in determining the proper pace of development in the town. Those who campaigned for immediate upgrading were primarily interested in quick action on town improvements. Those who were opposed were not only those who would be largely unaffected by the improvements but in addition those who suggested cautious progress lest the company pull out of the town and leave a large public debt. As a result of this conflict, a number of different policies were adopted in the course of development, none being overwhelmingly or unanimously supported. Willmott (1962) has suggested that problems of pace of development were inevitable because company and town had somewhat different interests in the matter. Better solutions might have been found, however, if there had been more regular contact and discussion between the town leaders and mine management. The implications of this would indicate the need for a permanent liaison committee to be established at the outset.

Willmott tends to view the changes in social behaviour rather lightly. For example, he suggests that changes which some people blamed on the mine were actually due primarily to general urban-industrial influences which were affecting all prairie towns, eg. an increasing effect of the diversity of occupation and income on social relationships. Another problem which was glossed over was the growing concern about the teenage problem, i.e., about smoking, drinking, sex relations and spending habits among young people. This was simply attributed to a growing trend in the prairie communities which was occurring regardless of whether or not industry had been introduced. Whether or not this was the case would be fairly difficult to substantiate. Nevertheless, a workable relationship seems to have been established between company and community in this case; the company needs the town for its employees and the community needs the company for employment and services.

D. Extensions and Conclusions

The well behaved citizens described in the foregoing examples present a unique alternative to the usual social disruption encountered when industrialization forces profound social changes. In fact they offer a distinct flicker of positivity to the overriding pessimism expressed by Toffler (1970) and the present report. By the same token, however, these examples portray a unique social interaction between industry and community: a mutually beneficial compromise was arrived at by all parties concerned. When such a common denominator is attained between any two bargaining units, the industrial agency is almost assured of a situation of peaceful coexistence with minimal reverbrations.

Not so effective or successful were the operations conducted in Easterville, Manitoba and Inuvik, Northwest Territories. Landa (1969) reports that when the native community of Chemahawin was relocated in Easterville for the purposes of flooding Cedar Lake, a steady process of social disintegration ensued. This was evident in the disruption of community leadership, power and authority, community factionalization along kinship and age lines, the increase in socially disruptive behaviours such as theft and juvenile delinquency, a steady breakdown in family structure, and the prevalent abuse of alcohol. Of course, none of these symptoms can be presented as mutually exclusive as illustrated in the following sequence: parents may spend great periods of time in a drunken state, thus limiting the exercise of parental control over adolescents, who in turn, may express this freedom in delinquent acts. Landa suggests that alcohol consumption is greater in Easterville than it was in Chemahawin because of the proximity of liquor vending outlets and the shift from a credit economy to a cash economy. By making alcohol a readily available commodity and placing no restrictions on its purchase, one is guaranteed of developing an overnight alcohol problem, especially when the abundance of leisure time is increased.

A report compiled by Acres Consulting Services (1973) notes a somewhat similar trend in Inuvik. This is another case in which native people were resituated, this time being moved from Aklavic to Inuvik due to the former's precarious physical and geographic position. Upon surveying the community of Inuvik from a social viewpoint, it was found that distinct social strata were already established with native people occupying the lowest position and consequently having an almost nonexistent voice in public policy. Characteristic of the social pathology inflicting the community residents were non-participation in economic activity by young native adults, welfare dependency, crime, gambling, gang hostility and the ever present drinking problem. The author(s) of the report attribute these behaviour patterns to the frustrations that native people experience in the acculturation process, where time honoured value systems must be abandoned in favour of white man's goals and objectives. What is ironic here is that although the native people are expected to achieve a white standard, they are never provided with any of the training or means required to meet these expectations.

The flaw which is prevalent in many such ventures has already been discussed to some extent. This is essentially the absence of a satisfactory agreement arrived at by the parties involved. In the Easterville case, the site which was chosen was far from unanimously acclaimed and eventuated from increased pressure from Manitoba Hydro (with all due respect). Residents of Aklavik were enraged when the location of Inuvik was disclosed; partly because they had not been consulted in the decision and partly because the site was devoid of adequate fish, game and fur resources. It can, therefore, be suggested that in both examples, the social dissemination may have occurred in response to the general feeling among the residents that the community was no longer their own community. When something doesn't belong to you and you have little or no vested interest in it, you are bound to treat it with less care and respect than if it were your own.

VII CONCLUSIONS

The focus of this report has been on social change, stress and northern development, as well as a broad assortment of related issues. It is abundantly clear that social change is an important determinant of both individual and social stress. Equally obvious are the results of stress which include unemployment, alcohol and drug abuse, welfare, suicide, crime, mental disorder and familial strife as well as some not considered in this report such as sexual promiscuity, culture breakdown, and satisfaction with life. As an entity that will soon experience social change in the form of modernization, northern Manitoba will soon manifest many of the conditions or results of stress discussed in this report. It is the function of the social engineer to minimize the impact of stress while maximizing the advantages that modernization can potentially offer.

Essentially, this involves the development of a three phase program: identification, intervention and evaluation. The first stage of the program necessitates the identification of particular stress effects for a given community, as well as their durations. Niehoff (1966), after observing a number of underdeveloped nations in transition, has attempted to create a cookbook detailing the ingredients of social change. He suggests that there are six primary process variables which impinge on the change process:

(1) the methods of communication used by the change agent, i.e., that the idea of the innovation has to be transferred fairly completely to the recipients, including establishing channels of feedback to get their reactions;

(2) the kind of participation that is obtained from the recipients, providing the only true indication that the local people have any real commitment to the new idea;

(3) the manner in which the innovation is utilized and adapted to the existing cultural patterns, i.e., utilization of the existing culture assists the change process because it presents the residents with a change without threatening their old system completely.

As far as the reactions of the residents are concerned, the primary variables are:

(4) whether they have an initial felt need. (Niehoff (1966) suggests that the existence of a felt need is a clear indication that the local people recognize

a problem themselves, and the complications of creating needs are avoided. Needs can be generated but, in general, they demand far more effort than changes based on existing needs. However, this may be required in the present context;

(5) whether they perceive any practical benefit in adopting a change, and;

(6) whether their traditional leaders are brought into the planning and implementing of the process, since leaders are brought into the planning and implementing of the process, since leaders have a vested interest in their positions and if these are threatened or ignored, they tend to resist outside influences.

Once potential or real stress effects have been identified, it is incumbant on the social engineer to design various strategies for coping with the stress. Psychology, defined as the study of human behaviour, has accumulated a wealth of information regarding stress effects which can be applied to northern Manitoba communities. For instance, Glass and Singer (1972) have reported that perceived control can dramatically reduce the effects of stress. Subjects who felt that they could control the onset of an aversive noise burst were able to cope more effectively on psychological tests than those subjects who did not have control. Perry (1974) has extended this research to cooperative /competitive situations in which the personality of the opponent was extremely important. He found that aggressive reactions toward a "warm" opponent were significantly less than toward a "cold" opponent, even when the subject had control over the opponent. An extrapolation of these studies suggests that perceived harm from Hydro development can be reduced if northern Manitoba residents feel they have some control over the development. This necessitates public participation in decision-making processes. However, as Perlman, Perry and Janisse point out, this does not seem to be the format used by Manitoba governments (1973).

Freedman Carlsmith, and Sears (1970) have summarized the research literature on attitude change. They point out that there are four important variables to consider in producing a change in attitude: the communicator, the communication, the channel and the audience. In order to reduce stress, sometimes it is necessary to change perceptions of an assumed "stressor". For instance, modernization may be perceived as extremely harmful by some northern residents due to lack of information, misinformation, etc., resulting in certain stress outcomes. However, using the model outlined above, attitudes can be changed regarding the harmful effects of development.

Of course, the most fundamental value that psychology can have is in the treatment of stress effects, once they occur. As Toffler has pointed out, future shock produces a number of behavioural consequences including disorganization. Many of the symptoms are closely analogous to mental disorders such as neuroses and psychoses. Psychologists, working in community health clinics, can offer a variety of services including therapy groups and behaviour modification to help those individuals suffering from severe stress effects.

A final phase in the program is the evaluation of the various intervention techniques in terms of their success in dealing with stress. This first implies that goals be established which clearly outline the purpose of a given technique and its proposed outcome. Because of the negative connotation program evaluation has in many government circles, this may be the most difficult phase of the program to implement. However, it is the most crucial as it is only at this stage that the value of the program can be assessed.

The attitude of the public, social scientist and government alike to the economic development of the north is often a curious mixture of romantic, imperialistic and scientific sentiment (Fields and Sigurdson, 1972). There is no doubt that such tendencies recur throughout the present report. Couched within this matrix is the disquieting assumption that it is the external society which is going to define for the northern resident the most satisfactory lifestyle, establish the mechanism by which that lifestyle can be achieved, and oversee any movement towards that end. While recognizing that the role of the social engineer is both a difficult and indespensable one, it would seem equally critical that his endeavours are undertaken in a mood of humility, constantly attuned to identifying the wants and desires of the people for whom he is planning, and geared to creating the situation in which the individual can seek fulfillment of such expectations.

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APPENDIX 8 - VOL. 3 - B

A PROPOSAL FOR A NORTHERN MANITOBA NATIVE CULTURAL CENTRE OR MUSEUM

A PROPOSAL FOR
A NORTHERN MANITOBA NATIVE
CULTURAL CENTRE OR MUSEUM

by

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Winnipeg, Manitoba
June, 1974

for

THE LAKE WINNIPEG, CHURCHILL AND NELSON RIVERS STUDY BOARD

SPECIAL NOTE

THE CONCLUSIONS AND RECOMMENDATIONS CONTAINED IN THIS APPENDIX ARE THOSE OF THE AUTHOR(S) AND ARE NOT NECESSARILY THE SAME AS THE CONCLUSIONS AND RECOMMENDATIONS OF THE LAKE WINNIPEG, CHURCHILL AND NELSON RIVERS STUDY BOARD AS EXPRESSED IN THE SUMMARY REPORT AND THE TECHNICAL REPORT.

PREFACE

This paper is one of a series of technical reports prepared or initiated by the Social and Economic Impact Study Team as background to a report entitled Social and Economic Impact Study of the Lake Winnipeg, Churchill-Nelson Rivers Hydro Development"

The purpose of the impact study is to identify the potential social and economic impacts of hydroelectric power projects on remote northern Manitoba communities, and to recommend mitigation and development measures.

The purpose of the technical background papers is to provide a basis for the conclusions and recommendations presented in the general report, as well as for future programs designed to encourage community development. This proposal points out the need for a co-ordinated effort to preserve native Manitoban culture and considers the establishment of a northern museum and/or cultural centre.

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and Environmental Management.

A NORTHERN MANITOBA NATIVE CULTURAL CENTRE OR MUSEUM

A PROPOSAL

1. INTRODUCTION

The transition of a community from a gathering society to an industrial society inevitably leads to widespread cultural change. An examination of northern Manitoba communities indicates that traditional cultural activities and artifacts are rapidly disappearing. In this respect, as in other aspects of community life, Hydro development is a significant factor in that it accelerates the rate of cultural change. This could result in a serious loss to the communities concerned, to Indian culture as a whole, and to the Province generally.

From the community standpoint, cultural heritage is as much a part of the quality of life as is ways in which members earn a living or make decisions. Thus, the objective of ensuring that such members are at least as well off with Hydro development as they would have been without the project, applies to cultural welfare as well as to other facets of community life.

From the Provincial standpoint, the opportunity to study and understand a way of life which typified traditional northern Manitoba settlements will soon be lost.

For these reasons, a cultural centre and museum is proposed as one means to:

a) preserve an identity for northern Manitoba residents,

b) provide southern Manitoba residents with an opportunity to understand a disappearing culture, and,

c) as one means of preserving one element or dimension of our cultural mosaic.

2. CULTURAL CHANGE

As communities move towards industrialization, residents become increasingly influenced by the conveniences and material goods associated with a different way of life. Gradually, social and cultural values are modified so as to approach those prevalent in industrialized societies. Second and third generation residents are thus apt to lose interest in the traditional rituals and artifacts which had been an integral and functional part of earlier community life. At some point, however, developing societies regret the loss of this link with their past and seek to preserve the remnants of a vanishing culture. The timeliness of this reawakening interest in cultural roots is particularly significant, since valuable information will be lost when the pioneer generation dies out. In northern Manitoba communities, the number of older residents who have information which is crucial to the preservation of native culture is diminishing.

According to one observer, many valuable artifacts are being syphoned off to museums in the United States (particularly Minneapolis), eg., medals given to various Chiefs when original treaties were signed and a Union Jack given to one of the Bands. Also, many Indian artifacts are in the hands of natives who are unaware of their historic value and are thus in danger of being lost or damaged through neglect. In as short a time as 10 years, the old rituals, dances and ceremonies will have been forgotten. In addition, traditional crafts are being neglected due to use of commercially processed materials. This is unfortunate since articles made from commercially purchased hides and furs lack the authenticity, durability, washability and beauty of articles fashioned from traditionally tanned materials.[1]

Native leaders, young people's groups, trappers' associations, and others have shown an interest in preserving the native heritage. However, to date, there has been no co-ordinated drive towards this end. In view of the rapid change associated with Hydro development, it is important to make interested groups aware of the need for quick action as well as to inform them of any financial and technical assistance available.

3. FINANCIAL & TECHNICAL ASSISTANCE FOR MANITOBA MUSEUMS

Some of the existing sources of financial and technical assistance available to community museums in Manitoba are summarized in Appendix I, pp. 16-22.

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[1] Reverend Cuthand, Anglican Church of Canada, Winnipeg, Manitoba. Personal communication.

4. MODEL OF A CULTURAL CENTRE AND MUSEUM

A museum may fulfill various functions, depending on the emphasis it places on its activities (A) its building (B) and its collection (C).[2] For example, a historical or naturalist association may undertake numerous activities, but give little or no consideration to collecting artifacts or owning its own building. Other projects may be based on any one or combination of the three elements. A "complete" or ABC museum is one which fulfills all three functions. (See Diagram #I)

The concept of a native cultural centre and museum presented below falls into the ABC category in that there would be a permanent building (B), in which to store artifacts (C). However, the main emphasis would be on the process of developing live displays, life size replicas of native camps, etc., as well as on various cultural activities (A).

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[2] Hemphill, Dr. H. D., "Museums, the ABC's", Locus 1. (February, 1974) pp. 6-7.

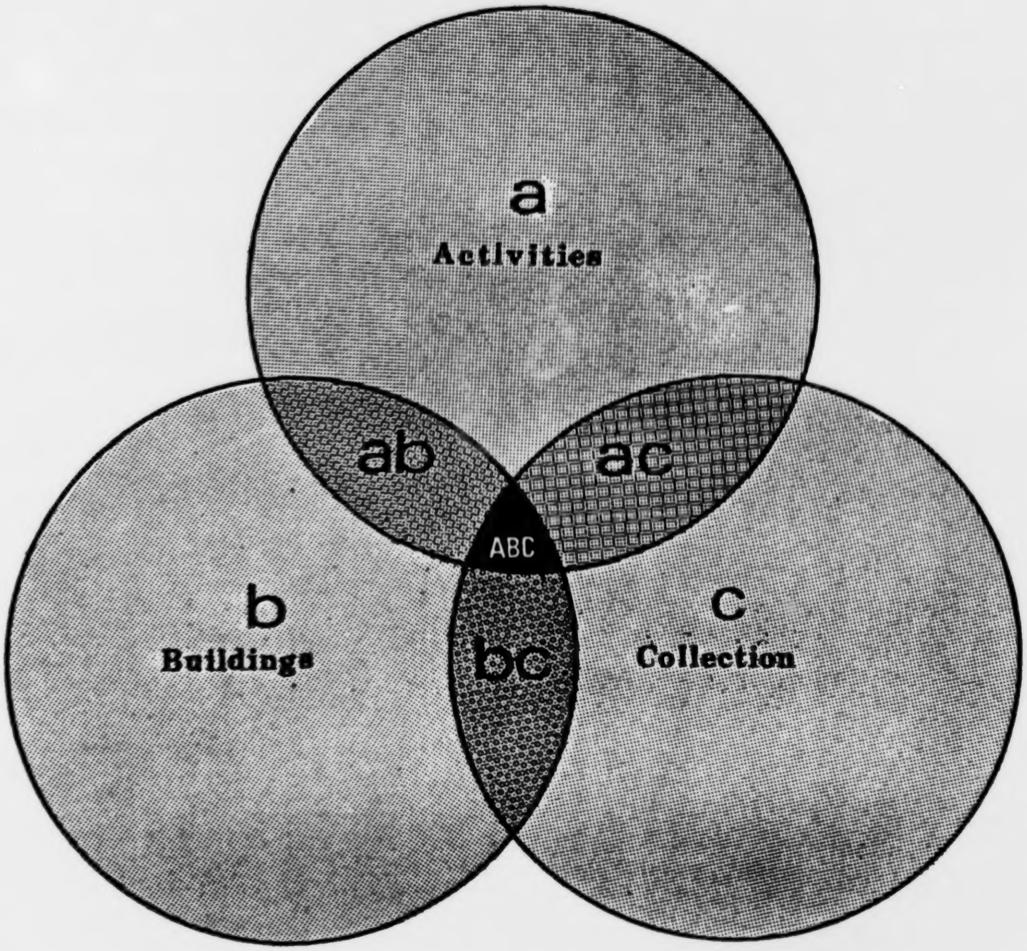
a
Activities
ab
ac
ABC
b
Buildings
bc
c
Collection

DIAGRAM #1: A Diagram of the Basic Elements of a Museum

One example of a "living" museum is the Western Development Museum in Saskatoon. The idea for this agricultural museum was born of a wish to preserve mementoes of pioneer life. Today, the museum is billed as "a million dollars worth of memories". The main display is the Main Street of "Boom Town", Saskatchewan which typifies a prairie village street of the early 1900's, complete with Bank, schoolhouse, hotel, station, stores, etc. The stores are stocked with appropriate merchandise and are tended either by living attendants or by mannequins dressed in early 20th Century costume. The buildings and mannequins are patterned from old photographs to ensure that they are authentic in design and detail. The roof of the display area is high and constructed of black colored steel so as to be unobtrusive. This adds to the illusion of being outdoors rather than indoors. The total effect is of having been transported back through time into a typical prairie community. The Saskatchewan approach is summarized below:

1) Buildings should be functional but built as cheaply as possible,

2) Use as much volunteer help as possible,

3) Start activities as soon as any funds are forthcoming, and add as more funds become available,

4) Use a well defined theme and restrict displays to those which fit the theme chosen,

5) Use local initiative and creative ideas, etc., rather than attempt to copy methods used in established museums,

6) Have a working relationship with organized special interest groups,

7) Co-operate with other government agencies but do not become a provincial government agency. In this way, a wider choice of funding sources is available.

The proposed northern Manitoba centre could follow a similar pattern in highlighting native artifacts and culture. This could include such displays as:

1) a replica of native fishing and/or trapping camp,

2) demonstrations of native dances, rituals, etc.,

3) live arts and crafts exhibits, such as birch bark chewing, moose hide tanning, etc.

The active participation of natives is crucial to the success of such a venture. This applies to the operation of the museum as well [illegible] to the planning and construction stage. There [illegible]er of ways in which to encourage such participation. For example, native organizations, such as the Manitoba Indian Brotherhood and the Manitoba Metis Federation, could participate in all aspects of the project. Trappers' associations or other special interest groups could contribute artifacts, information, displays, etc. Individual communities could be represented on the Board of Directors, and participate in construction. In addition, the program of the centre could include a Nelson House day, a Cross Lake day, etc., during which local residents could create and present displays and activities.

The administrative organization could follow the Saskatchewan pattern. The museum could be incorporated under a provincial Act and administered by a Board empowered to make necessary purchases and responsible for submitting annual reports to the Provincial auditor. Ideally, the daily operation and administration would be handled by native residents. Therefore, native people should be given the training necessary to fulfill this function.

The location of the centre is another important consideration. In order to be successful, the centre should be accessible to both northern Manitoba residents and tourists. The Pas is suggested as a town which has been closely linked to remote northern settlements for some years. Thompson is another possible choice. In this respect, as in planning generally, there should be native participation in arriving at a decision.

5. CONCLUSIONS & RECOMMENDATIONS

1. At present, there is no native museum in Manitoba. As a result, the native heritage is largely unrepresented in the museum system.

It is recommended that a native museum and cultural centre be established in northern Manitoba.

2. Native initiative is essential to the success of such a project for two reasons:

   i) If government departments or other external agents are in control of planning and administration, the project may well be perceived by native people as a project being done "for" them; this would destroy their necessary personal commitment to the project.

   ii) If paid professionals are imported to plan and operate such an institution, there will be a problem of continuity, since qualified professionals rarely remain long in remote areas.

Therefore, it is not advisable for outside agents to proceed before northern residents have demonstrated a willingness to participate in all phases of the project. The role of government would be to offer advice and assistance to a core group of native people.

It is recommended that any attempt at initiating a native museum be done with the sanction and participation of the existing native organizations in Manitoba, and that the concept of a museum be developed with the participation of the native people in the communities.

3. Native people are beginning to show an interest in preserving artifacts, folklore, rituals, etc., but to date, their efforts have been fragmentary. The overriding problem seems to be that northern Manitobans who could contribute a great deal are unaware of the potential in this regard. (The Manitoba Registered Trappers' Association wishes to start some means of preserving items and techniques peculiar to their livelihood. As yet, they are uncertain how to proceed). An initial promotion and awareness program throughout the remote northern communities is an essential step in development of a native museum or cultural centre.

   It is recommended that government agencies concerned with museums and with northern development make a concerted effort to inform native communities and organizations of the possible alternatives for museum development and that the possibility of involving the senior native students attending local Universities (particularly those in the native studies program) and of utilizing funds available through the Student Temporary Employment Program be undertaken by relevant government agencies.

4. (a) There are numerous sources of financial and technical assistance available to community museums. However some allowances must be made to suit the special circumstances of native people. For instance, Manitoba community museums are expected to provide a building

on their own. This is a means of determining the extent of community interest. However, to a less industrialized society, neither a spare building nor the capital to construct a building, is easily obtained.

It is recommended that the federal and provincial governments consider providing a capital cost grant in addition to the grants available for maintenance and operations.

(b) The National Museums Policy purports to expose more Canadians to the existing museum resources. To the extent that a museum has demonstrated willingness and ability to engage in exchange programs, it receives assistance from the National Museum Policy Program. However, due to the absence of a native cultural centre in Canada, and due to the importance of native involvement, it may be necessary to emphasize building a new collection and developing activities rather than expanding loaning and borrowing facilities in northern Manitoba.

It is recommended that geographical and ethnic balance be given priority over capacity to engage in exchange programs when considering assistance for a native cultural centre.

(c) The Canadian Museum Association has developed a native people's management training course. To date, this has never received funding and no native people in Manitoba have been trained in museum work. If trained personnel existed, it is possible that further training and employment could be generated through a government program such as the Northern Manpower Corps.[3]

It is recommended that funding be available for the native people training course sponsored by the Canadian Museum Association.

5. The success of a museum is largely dependent on attracting a wide spectrum of special interest groups.

   It is recommended that such groups as trappers' associations, fishermen's co-operatives, mining companies, forestry operations, Manitoba government departments working in the north, etc., be invited to co-operate and participate.

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[3] Manitoba Museum of Man and Nature, Manitoba Museums, an Inventory of Resources, 1973. A report commissioned by the Department of Tourism, Recreation and Cultural Affairs, Province of Manitoba, Winnipeg. p. 67.

6. There have been several instances of artifacts being sold to foreign agencies, particularly in the United States.

   It is recommended that regulations discouraging export of artifacts be strengthened.

APPENDIX I:

FINANCIAL AND TECHNICAL ASSISTANCE FOR MANITOBA MUSEUMS*

FINANCIAL ASSISTANCE

A. Museums and Miscellaneous Grants Act provides up to $2,000.00 per year to qualifying agents. By definition, Indian Bands are one type of agent. The money is intended for operational costs and not for capital costs.

B. The Manitoba Department of Tourism, Recreation and Cultural Affairs is willing to consider project ideas for which money may not be available elsewhere.

C. The Manitoba Arts Council is dedicated to the financial support of creative and interpretive activity. Museums where sculpturing, painting, etc., are part of the museum program are eligible for financial support from the Council.

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*A comprehensive inventory of assistance available for museum projects may be found in Museums in Manitoba, Inventory of Resources, 1973.

D. Provincial Employment Program and Student Temporary Employment Program provide salaries for socially and/or culturally valuable projects. The Northern Manpower Corps, Opportunity for Youth Program and Local Initiative Program also provide possible sources of salaries for a museum project. In particular, the Native Studies program at the University of Manitoba and the Brandon University provide possible sources of senior native students who would be eligible for Student Temporary Employment Program grants.

"The objectives of the Department of Native Studies, University of Manitoba, are:

1. To give native students a better knowledge of their own cultural heritage;

2. To give non-native students a better knowledge of their own cultural heritage;

3. To give a greater awareness of the full dimensions of the native Canadians' contemporary situation."[1]

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[1] "Native Studies now is now an Arts Department". Bulletin. For members and friends of the University of Manitoba community. 8 (31), 1974.

E. School authorities could be possible sources of space and/or materials if a museum provides programs of value to the school curriculum and which involve students. A case where this has occurred is Frontier School Division and the Gillam Museum. Also, the Native Cultural/Education Center Program provides money for cultural projects carried out in conjunction with established educational institutions.

F. The National Museums Policy is to democratize and decentralize the existing museum resources in Canada. Essentially, this is to expand movement of resources throughout the country and increase benefits to more Canadians. The National Museum Grants are intended to further this policy and not for operating expenses. For this reason, grants are provided largely on the basis of a museum's ability and willingness to participate in sharing its resources beyond its immediate locality. The National Policy makes provisions for "National Exhibition Centres" in areas without a museum. An exhibition centre is a building with little or no permanent collection, designed primarily to receive exhibits on loan. This policy has limited applicability to a Northern Manitoba Cultural Centre and/or Museum which would ideally be more intent on the process of developing museums collections and activities rather than the the goal of establishing facilities for borrowing from elsewhere in Canada.

G. The following is a partial list of potential sources of funds to acquire and to protect sites, routes, landscapes and objects of local, regional or national importance. Some such programs are:

1. Heritage Canada,
2. Heritage Manitoba,
3. Manitoba Historical Sites and Objects Act, 1972,
4. Byways and Special Places (applies to Nelson and Churchill Rivers) and,
5. Emergency Purchase Fund administered by the National Museum of Canada and is used to purchase objects which have been or are likely to be sold to foreigners. These may then be turned over to museums across the country.

H. Indian and Eskimo cultural advancement grants could be utilized to help with museum projects. Some such grants are:

1. Indian Treaty Research Program, and
2. Cultural Grants and Cultural Advancement Grants (for individual artists and groups but must be closely associated with the existing native groups).

I. The New Horizons Program provides government money to groups of 10 or more retired people for projects. They cannot receive salaries themselves but can employ others. Materials must be purchased by some other means.

TECHNICAL ASSISTANCE

A. Training: Canadian museum personnel are presently developing several institutions where training is offered. Some are:

1. Proposed Prairie Region Institute for the study of museums. The proposed course is to be 2 years, 1 in Winnipeg and 1 year of internship in various community museums.

2. Algonquin College Museum Technology Course which is a 3 year diploma course.

3. Proposed native people museum management seminars. This training course has been set up by the Canadian Museum Association but has not as yet received funding.

4. The Manitoba Museum of Man and Nature provides on-the-job training for 3 persons each year. A native person involved in a community museum (such as at Norway House) would receive priority.

5. The Manitoba Association of Museums workshops and seminars each year.

B. Ideas and Advice: The Manitoba Museum Advisory Service is available to help any community museum whenever requested. In addition, there is a Manitoba Association of Museums and a Canadian Association of Museums which provide vehicles for exchange of information and ideas.

C. Sources of Materials for Loan: The Manitoba Museum of Man and Nature Extension Exhibits Department has travelling exhibits to complement community museums. The National Museum of Canada has travelling exhibits but these are seldom utilized by small museums due to inadequate facilities. The Winnipeg Art Gallery will loan originals as well as reproductions with a small charge to cover transportation.

D. Research Sources: The Provincial Archives of Manitoba will be acquiring the Hudson Bay Company documents, maps, photographs, etc., and will enable access to materials currently unavailable to northern Manitoba residents.

APPENDIX 8 - VOL. 3 - C

THE IMPACT OF DEVELOPMENT ON NUTRITION IN REMOTE NORTHERN MANITOBA COMMUNITIES

THE IMPACT OF DEVELOPMENT
ON NUTRITION
IN REMOTE NORTHERN MANITOBA COMMUNITIES

by

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The Social and Economic Impact Study Team
Planning Branch
Manitoba Department of Mines, Resources and Environmental Management
Winnipeg, Manitoba
June, 1974

for

THE LAKE WINNIPEG, CHURCHILL AND NELSON RIVERS STUDY BOARD

SPECIAL NOTE

THE CONCLUSIONS AND RECOMMENDATIONS CONTAINED IN THIS APPENDIX ARE THOSE OF THE AUTHOR(S) AND ARE NOT NECESSARILY THE SAME AS THE CONCLUSIONS AND RECOMMENDATIONS OF THE LAKE WINNIPEG, CHURCHILL AND NELSON RIVERS STUDY BOARD AS EXPRESSED IN THE SUMMARY REPORT AND THE TECHNICAL REPORT.

PREFACE

This paper is one of a series of technical reports prepared or initiated by the Social and Economic Impact Study Team as background to a report entitled Social and Economic Impact Study of the Lake Winnipeg, Churchill-Nelson Rivers Hydro Development

The purpose of the impact study is to identify the potential social and economic impacts of hydroelectric power projects on remote northern Manitoba communities, and to recommend mitigation and development measures.

The purpose of the technical background papers is to provide a basis for the conclusions and recommendations presented in the general report, as well as for future programs designed to encourage community development. The following technical report considers the nutritional implications of change in communities affected by the Lake Winnipeg Regulation and Churchill-Nelson River Diversion projects.

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SUMMARY AND CONCLUSIONS

Among the difficulties facing communities within the study area is the problem of achieving and maintaining adequate nutritional levels. In this paper, the present levels and expected changes in dietary patterns are examined with a view to recommending ways to maintain and, where necessary, to improve the nutrient intake in such communities.

In the past, remote northern Manitoba communities relied heavily on land food such as meat, fish, and berries for their nutrient supply. Purchases of foods, other than such staples as flour and salt, were infrequent. With the transition from a gathering society to a partial wage economy, this pattern has been undergoing a change. Local residents have more money with which to buy a wider variety of foods, and less time and perhaps less inclination and incentive to hunt and fish. Under such circumstances, they tend to rely more and more on purchased foods. This shift in consumption patterns is likely to be accelerated when a project, such as the Churchill and Nelson Rivers hydro development, draws more residents into the wage economy.

It is therefore important to consider three questions:

1. Are residents of such communities likely to spend their wages to purchase foods which yield an equivalent or higher nutrient intake than that previously achieved? In other words, is the move towards a wage economy beneficial in terms of nutritional health?

2. Does this nutritional level compare favourably with the acceptable levels established for Canadian communities?

3. If not, what approaches might be considered to attain acceptable levels?

Relevant information was gathered from four sources. Detailed accounts are presented in Appendices 1 through 4 to this report. A summarized version of the findings is provided below.

Appendix 1:

A paper on nutrition in northern Manitoba communities was prepared by a nutritionist with the University of Manitoba Home Economics Department at the request of the Study Team.

This report presents an overview of the literature dealing with nutritional problems in remote native communities. It points out that nutrition is a development problem as well as a welfare problem, since "poor nutrition adversely affects mental and physical development, productivity, and the span of working years - all of which significantly influence the economic potential of man." This aspect is particularly relevant to the capacity of native residents to adapt to the rigorous requirements of an industrialized society.

The studies reviewed in the report highlight a few general points. Three of the studies are discussed below.

a) In a study undertaken in 1948, Attawapiskat, an isolated Indian community, was compared with Rupert's House, a less remote community with a relatively sound economy. In both cases, the consumption of milk, fruits and vegetables was low, resulting in low intakes of ascorbic acid and calcium. Gingivitis, a disease associated with inadequate intake of ascorbic acid was present in both reserves. In terms of Vitamin A intake, the less remote community at Rupert's House was significantly below the poorer isolated community of Attawapiskat. It was also pointed out that more candy was consumed at Rupert's House and that this community had a higher incidence of tooth decay. Although intake of other nutrients in both places was close to the recommended intake levels, it was suggested that this fact gave a misleading impression of nutritional health since some problems are not reflected in the data. For example, seasonal variations in nutrient supply are not taken into account. Neither is the fact that the "rigorous climate, high physical exertion, excessive light reflection from the snow, and the presence of tuberculosis, may have increased nutritional needs above normal."

b) A more recent study of two Manitoba communities, Fort Alexander, a "modern" community, and Split Lake, a "traditional" one, yielded similar results. It was pointed out that diversity in diets at Fort Alexander makes meal preparation simpler, but does not ensure an improved nutritional level. In both cases, the intake of fruits and vegetables was below the acceptable level. In addition, the intake of "empty calorie" foods like candy, ice cream, pop. etc., was significantly higher in the industrialized community. Such foods have a low nutrient/calorie ratio and, if consumed in quantity, contribute to such problems as overweight and tooth decay. Since Split Lake is one of the communities which will be affected by the hydro development project, these findings are particularly relevant to the impact study.

c) A study recently released by Nutrition Canada (1973) indicates

> that the nutritional status of the Indian population is at high risk in many instances, as shown in Tables 8, 9, and 10. All physiological age groups under study across Canada exhibited a number of serious nutritional problems. These are particularly notable when results are compared with the general population. Because a detailed breakdown by region has not yet been released, no precise information on nutritional status of Manitoba peoples is available. (Expected date of release is end of June, 1974.)

It appears that while exposure to a more industrialized culture results in a wider diversity of diet, the additional foods consist mainly of domestic meat, bread, processed foods and sweets. There has been no tendency to add the fruits, vegetables and dairy products which are necessary for good nutrition but were unavailable in the traditional society.

The above studies do not indicate that the protein intake of communities which purchase meat would be lower than that of communities which rely on hunting and fishing. However, other observers have suggested that this is a possibility.

Generally, the findings suggest

1. that the nutritional health of native communities in northern Manitoba, as in other native communities in Canada, is poor relative to the Canadian average, and

2. that industrial development does not ensure improved nutritional health and, in fact, can have some adverse effects on nutrient intake.

In view of these findings, the author made nine recommendations designed to encourage natives

1. to retain some traditional food habits, and

2. to purchase more nutritious foods, such as fresh fruit, vegetables and dairy products, and less empty calorie foods, such as candy and soft drinks.

The recommendations stress the need for education and information regarding nutrition, budgeting, storage facilities, preserving techniques, meal planning, and food preparation, as well as for health care programs with a strong nutrition component.

Appendix 2:

Another point of view is presented in a paper on the lifestyles and dietary patterns characteristic of native groups in the vicinity of Churchill, Manitoba. Several interesting observations were made regarding the impact of change on diet.

a) There is a marked difference between the hunting activities of the Cree and those of the Chipewyans. The Cree, who have had a relatively long and close association with the non-Indian culture, have maintained their interest in big game hunting, whereas the Chipewyans, whose move away from dependence on traditional pursuits is much more recent, have virtually abandoned this practice. Apparently, the Chipewyans had difficulty in reconciling the immediate demands of the wage economy with those associated with traditional pursuits.

> Few Chipewyans retained dog teams when they moved out of the bush and they have not yet accepted the concept of saving money for skidoos or more expensive guns.... Possibly, when they recover from the initial shock of being moved to a place where their way of

> life is not longer practical, and they learn more about steady jobs, saving money, care of equipment, etc., the Chipewyans will begin to do more hunting.

b) The type and quantity of purchased food consumed varies according to how long it is until pay day, how much has been spent on drinking, etc. In general, fresh fruit, vegetables and dairy products are the least common purchases. The children eat a great deal of candy and soft drinks, and use generous amounts of sugar in their tea. Other purchases are made with little or no regard for quality, price, or shopping techniques. In some cases, drinking accounts for much of the wage income. In others, welfare money is similarly misspent. Few residents plan meals, budget for food purchases, or give priority to the most necessary items. This is particularly true of the older people in the community.

c) Despite the fact that fish and game are less abundant than they once were, and that there is less time and inclination to engage in traditional pursuits, land food is still an important component of diet in this area. In the observer's opinion, although residents would not starve if moose and caribou were no longer available, the nutritional value of their diet would be inferior.

These observations support the hypothesis that problems associated with the transition to a wage economy can cause a deterioration of nutritional levels.

Appendix 3:

The above information deals with the dietary patterns of natives whose lifestyle is substantially affected by the demands of a wage economy. By way of contrast, a report on the daily activities of one South Indian Lake family, provides information regarding diet and food preparation on the trapline. As might be expected, land food constitutes a significant percentage of the diet of the trapper and his family. Fish, moose, ducks, geese and rabbits are available throughout the year. Other types of game are prepared and eaten in season.

Since there is little stress on preserving techniques or storage facilities, most of the fish and game are eaten fresh. Serving sizes are generous but vary according to the season and the amount available. Berries in season are eaten fresh, as well as being used for wine or pies. Tinned vegetables, meats and soups are used intermittently to supplement the diet. However, most meals consist of homemade soup, meat or fish, potatoes, and bannock or bread. Desserts include berries, pie, cookies, or bannock with jam, brown sugar or corn syrup. The family also purchases a variety of packaged foods, such as oatmeal, spices, baking ingredients, etc.

In this particular case, the family appears to be well supplied with both land foods and purchased foods. However, it is not known whether this situation has general application.

Appendix 4:

The Social and Economic Impact Study Team held formal interviews with residents of communities affected by the Churchill-Nelson hydro project. Data from the interviews conducted at Cross Lake and Nelson House indicate that although a large portion of meals consist of commercial food, there is still a significant number of meals of bush food in almost all homes. At Cross Lake, 97% of residents and at Nelson House 80% of residents reported using bush food during 1973/74. The average frequency of bush food meals was twenty-four times a month at Cross Lake and eleven times a month at Nelson House. In both communities fish comprised about half of bush food consumed, while waterfowl and moose comprised about one-third. The remainder consisted of trapped species.

As the opportunity for wage employment increases, the inclination to trap declines and this source of land food will become negligible. On the other hand, it is by no means certain that the inclination to hunt will further decline. Most of the residents return home frequently (weekly or monthly), many enjoy hunting, and the use of airplanes has greatly facilitated moose hunter success. The limiting factor will be the number of moose and waterfowl available. Development in the north, e.g., road construction, hydro projects, mining operations, etc., may cause some decline in adequate habitat. In addition, an increase in hunters may cause severe hunting pressure on the existing animal populations.

As indicated, the disappearance of land foods from the diet of native peoples could result in a deterioration in nutritional health. It is therefore recommended that local residents be encouraged to maintain some of their traditional sources of food. Since this depends upon a continuing supply of available game, two measures which might be considered are:

1. a restriction of non-native hunting, and

2. a program whereby fish, where available, and game could be traded for commercial foods,

thus affording non fishermen and non hunters
the opportunity to acquire land food.

Locally grown berries (blueberries, saskatoons, cranberries, strawberries, raspberries, etc.) are used by about 80% of the residents at both Cross Lake and Nelson House. The majority of families use wild berries during the summer and perhaps in the fall months. Some people reported canning for winter use and cranberries are often stored semidried. However, most often the large family (average 7) and occasional poor harvests in dry years limits the supply available for preserving. Thus, it appears that this source of food is presently being fully exploited and that little can be done to increase the use of berries in these communities.

Vegetable gardens are essentially non-existent at Cross Lake. Two reasons given for not gardening were:

1. the community is overcrowded with buildings, and

2. the children often "raid" the gardens.

On the other hand, almost half of the residents of Nelson House use locally grown vegetables (primarily potatoes). It is difficult to determine how many of these cultivate gardens themselves and how many receive gifts of produce from relatives and friends. The vegetables mentioned were potatoes, carrots and turnips, and to a lesser extent onions, corn and peas. Other than storing, residents have no means of preserving vegetables. Few homes reported using their own vegetables during the winter. This is probably due to:

1. relatively large families and small gardens, and

2. frequent gifts to friends and relatives (characteristic of a more traditional or rural community. See Nelson House Community Profile, Social and Economic Impact Study, Lake Winnipeg, Churchill and Nelson Rivers Study.

Home grown vegetables can be a valuable source of nutritious foods often lacking in a totally "commercial" diet. However, until such time as a community becomes sufficiently urbanized so that:

1. the family size decreases,

2. community planning includes delineated yards and property,

3. the value placed on the extended family unit diminishes,

4. there is a successful, formal means of social control to decrease vandalism, e.g., local police, etc., and

5. government housing programs make provisions for storage facilities.

Vegetable gardening on a large scale is not feasible.

Should these criteria be met in Cross Lake and Nelson House, gardening could become more viable in the future.

Summary

The four studies indicate the following:

1. There is little hard information available on the effect of changes in lifestyle on nutrition. What is needed is data on nutritional levels in a community at the traditional stage of development compared with levels in the same community after modernization is well under way. From this standpoint, the community of Split Lake is a logical choice. The Fort Alexander-Split Lake study mentioned earlier provides data relevant to this community at the traditional stage. It is therefore recommended that a further study of nutritional health in this community be undertaken following completion of the hydro development project.

2. Although there is no conclusive evidence regarding the impact of change, some research findings indicate that the industrialization process can have a detrimental rather than a benefical effect on nutrition. This is due partly to the decrease in land food and partly to the increase in "empty calorie" foods. It is true that increased availability of purchased foods includes nutritious items like fresh fruits, vegetables and dairy

products, as well as empty calorie foods like candy, cookies and soft drinks. However, native residents are not taking full advantage of this positive aspect of modernization due to inadequate knowledge of shopping techniques, meal planning, food preservation and nutritional health.

3. There is more conclusive evidence to indicate that remote native communities are well below the Canadian average in nutritional health.

4. There are two objectives upon which to base attempts to raise nutritional levels.

    a) Encourage native residents to retain traditional food patterns wherever possible.

    b) Provide residents with the opportunity to learn more about nutritional health, budgeting, storage, preserving, meal planning and food preparation.

The first objective may be realized through programs designed to protect traditional sources of land food, e.g., restrict non-native hunting. The second objective requires a fully integrated nutrition program involving education authorities, health care agencies, etc., and structured to provide information and training by qualified professionals in all aspects of food consumption.

APPENDIX 1

NUTRITIONAL IMPLICATIONS OF LIFESTYLE CHANGES IN REMOTE NORTHERN MANITOBA COMMUNITIES

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INTRODUCTION

There are significant differences between communities supported by traditional activities, such as fishing and hunting, and more industrially advanced communities. This is particularly true of food consumption patterns, in that members of traditional communities include a relatively high percentage of land food in their diet, whereas the wage earners of industrialized communities are largely dependent upon commercial food products. It follows that changes in diet will likely occur as a result of a transition from a traditional community to a wage economy. As the community moves in this direction, an increasing variety of foods, such as fresh milk, fruit, processed products, soft drinks and candy, become available for purchase. At the same time, the availability of fish, game and other domestically gathered land food diminishes.

In terms of nutrition, such changes may entail both advantages and disadvantages. To the extent that residents have the inclination, knowledge and financial resources to compensate for the loss of high protein foods like fish and game by substituting commercial products with high nutrient value, their nutritional health can be maintained or improved. However, if they are unable or unwilling to make this adjustment, there could be serious deterioration of nutritional standards.

The problem of maintaining or improving nutritional health in the face of rapid change is applicable to those remote communities in northern Manitoba affected by the hydroelectric power development project currently under way. Such communities are already in a state of transition, and it is expected that the hydro project will accelerate the rate of change:

(a) because it will have an impact on the physical resource base, and

(b) because it provides construction jobs as alternatives to traditional pursuits.

From a compensation and development standpoint, it is important to assess the impact of such changes on the nutritional health of the residents concerned. It is not known to what extent or in which direction nutrition problems may evolve due to lifestyle changes. However, a recent survey of the nutritional status of Canadians indicated that the native people of Canada are subject to the greatest risk of poor nutrition. In turn, poor nutrition adversely affects mental and physical development, productivity, and the span of working years - all of which influence significantly the economic potential of man. Historically, malnutrition has been viewed as a economic development problem. However, in view of its effect on human potential, it must be viewed as a human development.

problem as well. With these factors in mind, it is the purpose of this paper to explore the possible nutritional implications of lifestyle changes in remote northern Manitoba communities. Because there is little published data on the nutritional status of this area, reference will be made to research findings from other Canadian studies. A historical look at the traditional diet will be compared to speculation on the present and future diet of residents within the study area.

NUTRITIONAL STATUS OF CANADIAN INDIANS

A. NATIONAL PERSPECTIVE

Historically, that is, before the intrusion of the white man, the Indian population was totally dependent on the land and/or sea for food. The lives of these people centred around the search for land game and/or fish. The west coast Indian ate a diet consisting mainly of fish, seaweed and plants. In the interior of Canada, the Indian depended more on hunting for food, though fishing was a common practice when lakes and rivers were nearby. Fish, deer, bear and other game were the major protein sources, while the fat and blood of these animals was used for food and for healing salves. Grains, berries, nuts, and plant greens also contributed considerably to the food supply. Domestic animals and thus milk were not a part of their diet. (MacDermot, 1949)

Van Wart (1948) described the food habits of the Maritime Indian as "When they were hungry they hunted." When the hunt was unsuccessful, they lived on tobacco and took no exercise. Four to five good meals or feasts restored them to good health. Moose, deer, caribou, bear, otter, beaver, porcupine, partridge, wild goose, teal, ducks, wild pigeons, rabbits, snipe, cod, salmon, bass, trout, smelt, and shellfish were all part of their diet. Moose grease was used as a beverage while heart, kidney, tongue and entrails were relished.

Maple sap, strawberries, gooseberries, apples, Indian corn, beans, pumpkin, micmac potatoes, and nuts were eaten as the season allowed. Van Wart (1948) reported that the Indians felt it was their sacred duty to eat all that was provided so that feasts would continue until all of the animals were eaten.

With the coming of the white man came some modification in diet. While the present day diet of the Indian retains much of the traditional foods of the land, it has been influenced by modern foods and methods of preparation. The extent to which modern food habits have intruded is dependent on the nature and location of the community. Many remote and isolated communities exhibit few if any changes from traditional food patterns.

The literature includes studies, done mainly in the 1940's and 1950's, which give some indication of the relationship between food habits and nutritional status. In spite of the twenty to thirty year time lapse, much of this information may be relevant to the communities under study in northern Manitoba.

In 1948, Vivian _et al_ compared the nutritional status of two Indian bands typical of the Canadian Bush Indian. The two groups under study were the Attawapiskat, an economically poor group at the western end of James Bay, and the Rupert's House Band with a comparatively good economy at the south eastern section of James Bay. In both instances, housing conditions were poor with meagre supplies of cooking utensils, including a fry pan, iron pot, and a lard pail. Each community obtained food by hunting and fishing as well as from local stores. Table 1 lists the purchases per person from the store and food per person from the garden.

Table 1

TOTAL FOOD PURCHASE & GARDEN GROWN FOODS*

Food	Attawapiskat Weight (oz.)	Rupert House Weight (oz.)	Attawapiskat Calories	Rupert House Calories
Flour	8.24	8.93	820	884
Sugar & Jams	3.32	2.62	370	638
Fat & Butter	1.30	2.96	328	318
Milk & Cheese	0.54	1.86	166	219
Oatmeal & Cereal	1.01	6.22	114	138
Vegetables	1.72	1.10	52	76
Citrus Fruits & Tomatoes	0.45	0.78	3	7
Other Fruit	0.45	0.91	33	61
Canned Meat	0.41	1.45	29	45
Other Foods	0.01	0.12		1
TOTAL			1,915	2,387

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*Can. Med. Assoc. J. 59:505, 1948.

It can be seen that the lower income group (Attawapiskat) consumed more sugar and jams, while the Rupert's House Band consumed more milk, cheese, oatmeal and cereal products. The consumption of milk, fruits, and vegetables was low in both groups. The nutrient intake from all food sources of these groups is recorded in Table 2.

Table 2

NUTRIENT INTAKE PER PERSON
PER DAY FROM ALL FOOD SOURCES*

Nutrient	Attawapiskat	Rupert House	Recommended Intake**
Calories	2,546	3,103	2,790
Protein (gm.)	114	110	64
Calcium (mg.)	425	363	970
Iron (mg.)	17	17	11
Vitamin A (IU)	7,184	2,280	4,300
Thiamine (mg.)	1.3	1.5	1.3
Riboflavin (mg.)	1.5	1.7	1.85
Niacin (mg.)	16	17	13
Ascorbic Acid (mg.)	12	14	68

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*Can. Med. Assoc. J. 59:505, 1948.

**Based on U.S. N.R.C., Recommended Daily Intake, 1945.

Both populations were low in intakes of ascorbic acid and calcium (a reflection of low intakes of fruits and vegetables and milk, respectively). Low intakes of thiamine and riboflavin are evidenced in the Attawapiskat and to some extent in the Rupert's House Band. This is unlikely to be a problem today, since flour is currently enriched with thiamine, riboflavin, and niacin. Clinical signs of Vitamin A deficiency supported the finding of inadequate Vitamin A intake among the Rupert's House Band.

It should be noted that the nutrient intake figures may provide a more positive and therefore misleading picture of nutritional health. Because of marked seasonal variation in food supply, absence of methods of food preservation and food transportation difficulties in winter, there was substantial variation in the nutrient supply available to these groups. Moreover, the influence of environmental factors such as rigorous climate, high physical exertion, excessive light reflection from the snow, and the presence of tuberculosis may have increased the nutritional needs above normal.

Gingivitis, associated with inadequate intake of ascorbic acid, was found in both reserves. The teeth of the two bands were examined for tooth decay. Table 3 illustrates the findings of this examination.

Table 3

PERCENTAGE OF INDIANS WITH
NO MISSING, DECAYED, FILLED TEETH*

Age	Sex	Attawapiskat	Rupert's House
2 - 12	Male	48	0
	Female	62	20
13 - 25	Male	50	24
	Female	30	9
26 - 45	Male	37	14
	Female	21	0
46 & over	Male	43	12
	Female	16	0

At all age levels, the teeth at Rupert's House showed a much greater prevalence of decay than at Attawapiskat. This latter Band, which was much more remote from civilization, had remarkably good teeth. Fifty percent of the 13 to 25 years age group still had no missing, decayed or filled teeth as compared to 24% of the males and 9% of females at Rupert's House. While the total sugar intake for the preceding year was slightly higher at Attawapiskat (3.3 oz. per person per day as compared to 2.9 oz. per person per day at Rupert's House), the use of hard candy at Rupert's House was nearly three times as great as at Attawapiskat. This factor may at least partially account for the higher incidence of dental caries in this latter group. Analysis of drinking water used by both groups indicated a low level of fluorine (0.1 p.p.m.) which may have affected resistance to dental caries. These dental problems are a direct result of the erosion of traditional food habits by substituting modern, refined foods.

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*Can. Med. Assoc. J. 59:505, 1948.

About ten years later in 1958, Best and Gerrard of the University of Saskatchewan, studied the nutritional status of two groups of Indians, one at Pine House, the other at Pelican Narrows in Saskatchewan.

Pine House is an isolated settlement (population 200, 1958), where the inhabitants lived mainly by trapping and fishing, subsisting primarily on bannock and fish, supplemented with lard, some milk, and fresh meat.

Pelican Narrows which comprised nearly 600 people consumed a diet similar to that at Pine House with the addition of more milk, porridge, fruit, fish and bread.

One of the factors which initially precipitated this study was the observation that the infant mortality rate (an index of standard of health) was 75.9 per 1,000 live births in Northern

Saskatchewan as compared to 25.5 per 1,000 live births for the province as a whole. Inadequate nutrition contributed to this poor standard of health.

Seventy-six school-age and pre-school children were the subjects of anthropometric measurements, while biochemical evaluation was undertaken to determine hemoglobin values (measure of iron nutriture), serum levels of ascorbic acid, Vitamin A, cholestrol and total protein.

Results of anthropometric measurements are shown in Table 4.

Table 4

HEIGHTS OF CHILDREN AT PINE HOUSE & PELICAN NARROWS, EXPRESSED AS A PERCENTAGE OF THOSE EXPECTED FOR AGE, & WEIGHTS AS A PERCENTAGE OF THOSE EXPECTED FOR HEIGHT*

	Pine House		Pelican Narrows	
	Heights	Weights	Heights	Weights
Boys	98%	100%	96%	103%
Girls	97%	92%	100%	105%

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*Can. Med. Assoc. J. 81:915, 1959.

This data indicated that in terms of general physical status, there was no cause for concern. The results of biochemical tests were less favourable. While no actual deficiency diseases were identified, serum levels of Vitamin A and carotene (a precursor of Vitamin A), and ascorbic acid were low, as seen in Table 5. Serum protein levels in Pine House children were in the normal range while children from Pelican Narrows exhibited lower levels. Iron deficiency anemia was observed in younger children (11-24 months) at Pelican Narrows. This problem is widespread among younger children and can be traced back to maternal diet in pre-natal stage and to poor infant feeding practices.

Table 5

SERUM VITAMIN A, CAROTENE, ASCORBIC ACID, PROTEIN AND CHOLESTEROL LEVELS*

Nutrient	Pine House Boys	Pine House Girls	Pelican Narrows Boys	Pelican Narrows Girls	Normal Range
Vitamin A gm./100 ml.	14	14	14	16	28 - 100
Carotene gm./100 ml.	32	34	53	45	40 - 100
Ascorbic Acid mg./100 ml.	0.44	0.53	0.92	0.81	0.4 - 1.5
Protein gm./100 ml.	7.4	7.3	6.7	5.9	6.8 - 8.0
Cholesterol mg./100 ml.	-	-	177	183	150 - 250

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*Can. Med. Assoc. J. 81:915, 1959.

TABLE 6 Daily Nutrient Intakes of Anaham Children. Means and Standard Deviations are given. Figures in parentheses represent number of individuals receiving less than 2/3 Canadian Dietary Standard.[1]

	2 - 4 years n=19		4 - 6 years n=32		6 - 9 years n=29		9 - 13 years n=27	
Calories	1232±593	(8)	1278±505	(14)	1613±738	(15)	1724±615	(13)
Protein (gm)	54±27	(0)	53±19	(0)	67±30	(2)	69±28	(2)
Calcium (mg)	794±502	(6)	756±422	(7)	886±579	(9)	907±574	(16)
Iron (mg)	5.2±3.0	(5)	6.0±3.8	(4)	7.6±5.1	(4)	8.7±4.6	(1)
Vitamin A (I.U.)	2670±2250	(3)	2565±2461	(5)	2970±3315	(13)	3123±3248	(9)
Thiamine (mg)	0.77±0.27	(0)	1.05±1.02	(0)	1.44±1.23	(0)	1.52±1.34	(0)
Riboflavin (mg)	1.40±0.69	(0)	1.59±1.19	(1)	1.98±1.55	(2)	2.02±1.69	(3)
Niacin (mg)	13.6±6.5	(0)	14.6±5.6	(0)	19.8±8.9	(0)	20.4±7.9	(0)
Ascorbic Acid (mg)	43±33	(3)	35±22	(5)	41±21	(2)	44±21	(2)
Vitamin E (mg)	15.8±24		17.7±22		13.1±8.9		19.5±15.7	
Fat (gm)	44±28		47±26		50±33		52±24	
Carbohydrate (gm)	120±67		125±60		165±92		187±107	

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[1] Lee et al, 1971, National Health and Welfare.

TABLE 7 Daily Nutrient Intakes of Anaham Adolescents and Adults. Means and Standard Deviations are Given. Figures in Parenthesis represent the number of individuals receiving less less than 2/3 Canadian Dietary Standard.[1]

	Males 13-20 years n=13		Females 13-20 years n=18		Males 20+ years n=29		Females 20+ years n=45	
Calories	1950±1189	(10)	1590±534	(12)	2180±808	(11)	1772±623	(22)
Protein (gm)	71±32	(2)	64±25	(4)	95±46	(4)	76±30	(4)
Calcium (mg)	871±572	(7)	727±438	(10)	997±646	(6)	802±441	(7)
Iron (mg)	8.3±4.1	(7)	8.2±4.4	(11)	9.2±3.8	(2)	7.6±3.1	(20)
Vitamin A (I.U.)	2320±2227	(7)	2124±2559	(13)	4060±5350	(18)	4960±5194	(21)
Thiamine (mg)	1.48±0.88	(0)	1.43±0.83	(0)	1.54±0.76	(1)	1.21±0.43	(3)
Riboflavin (mg)	1.93±1.27	(5)	1.76±1.14	(3)	2.16±1.24	(6)	1.68±0.74	(8)
Niacin (mg)	20.3±8.2	(0)	20.4±7.9	(0)	28.1±14.9	(1)	23.2±9.8	(1)
Ascorbic Acid (mg)	42±25	(2)	40±18	(2)	58±30	(3)	47±26	(7)
Vitamin E (mg)	17.3±12		15.4±24.3		24.6±24.4		25.0±29.5	
Fat (gm)	67±68		40±17		80±43		61±29	
Carbohydrate (gm)	194±112		164±79		212±105		189±94	

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[1] Lee *et al*, 1971. National Health and Welfare.

TABLE 8 Dietary Evaluation[1] of Canadian Indian Children and Adolescents by Age.

Percentages with Inadequate and Less-Than-Adequate Intakes of Nutrients.[2]

Nutrient	0 - 4 Years Inadequate	0 - 4 Years <Adequate	5 - 9 Years Inadequate	5 - 9 Years <Adequate	(Boys) 10 - 19 Years Inadequate	(Boys) 10 - 19 Years <Adequate	(Girls) 10 - 19 Years Inadequate	(Girls) 10 - 19 Years <Adequate
Protein	2.4	4.4	1.2	3.7	4.0	6.5	10.2	17.1
Iron	30.1	21.0	16.1	27.4	20.5	36.1	44.1	30.9*
Calcium	21.4	20.7	32.2	39.2	53.3	25.4*	63.2	22.8*
Potential Vitamin D	34.3	42.5	46.6	44.5*	55.6	37.9*	62.0	29.6*
Vitamin A	14.3	9.3	14.4	19.8	30.6	18.9	41.8	22.0*
Vitamin C	3.4*	12.0	10.6	15.9	5.1	21.4	8.9	24.1
Thiamine	2.3	13.6*	0.4	14.8*	3.6	18.8*	11.8	26.2*
Riboflavin	4.0	4.3*	0.9*	23.7	2.3*	25.0	10.7	34.9
Niacin	1.1	1.7*	0.3	4.1	3.0	5.2	4.4	11.0

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[1] Nutrition Canada National Survey 1970-1972.

[2] Inadequate levels are considered to be below the desired amount of a nutrient. Less-than-adequate levels are those above a minimum requirement but below the desirable amount of a nutrient.

*denotes cases where intake of Indian population exceeded that of General Population.

TABLE 9 Dietary Evaluation of Canadian Indian Adults.[1] Percentages with Inadequate and Less-Than-Adequate Intakes of Nutrients.[2]

Nutrient	20 - 39 Years (Men) Inadequate	20 - 39 Years (Men) <Adequate	20 - 39 Years(Women) Inadequate	20 - 39 Years(Women) <Adequate	40 - 64 Years (Men) Inadequate	40 - 64 Years (Men) <Adequate	40 - 64 Years(Women) Inadequate	40 - 64 Years(Women) <Adequate
Protein	3.7	14.5	10.2	19.9	4.6*	17.8	22.8	16.2
Iron	2.7*	12.2	41.7	35.7*	4.8	23.6	52.7	31.5*
Calcium	16.5	23.1	41.4	21.6*	16.8	31.8	28.5	25.1*
Vitamin A	25.7	17.6	45.3	16.4*	27.6	15.0	37.0	23.1*
Vitamin C	6.2	15.7	10.8	26.4	12.7	14.5	7.3	24.8
Thiamine	9.4	19.7	19.6	28.2	11.3	32.1	23.6	28.1*
Riboflavin	3.8*	31.3	8.4	46.4	8.4	31.3	13.8	36.2*
Niacin	3.6	2.4	5.5	4.7*	0.2	6.4	5.5	12.5

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[1] Nutrition Canada National Survey 1970-1972.

[2] Inadequate levels are considered to be below the desired amount of a nutrient. Less-than-adequate levels are those above a minimum requirement but below the desirable amount of a nutrient.

*denotes cases where intake of Indian population exceeded that of General Population.

TABLE 10 Dietary Evaluation of Canadian Indian Elderly Adults and Pregnant Women.[1]

Percentages with Inadequate and Less-Than-Adequate Intakes of Nutrients.[2]

Nutrient	65+ Years (Men)		65+ Years (Women)		Pregnant Women	
	Inadequate	Adequate	Inadequate	Adequate	Inadequate	Adequate
Protein	14.0	22.6	27.4	16.0*	9.7	17.0
Iron	11.5	24.4*	18.4	34.2*	37.9	32.7
Calcium	25.7	34.2	34.0	22.5*	58.6	18.9
Potential Vitamin D	-	-	-	-	66.6	15.6*
Vitamin A	34.2	20.8*	49.9	12.5*	24.3	21.9
Vitamin C	9.0	29.5	7.8	29.2*	10.5	15.7
Thiamine	18.7	29.7	36.5	27.8*	15.5	22.4
Riboflavin	9.2	29.6*	13.2	44.7	6.8	34.4
Niacin	1.3	10.5	6.5	19.5	1.7	10.3

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[1] Nutrition Canada National Survey 1970-1972.

[2] Inadequate levels are considered to be below the desired amount of a nutrient. Less-than-adequate levels are those above a minimum requirement but below the desirable amount of a nutrient.

* denotes cases where intake of Indian population exceeded that of General Population.

Information on actual food consumed was not collected in this study. It may be observed however that inadequate Vitamin A, carotene, and ascorbic acid levels probably reflect a low intake of fruit and vegetables as was observed in the previous study.

Best and Gerrard (1959) also reported a high incidence of infections and disease. The synergistic effect of poor nutrition and infection is well documented. This problem was particularly evident in Pelican Narrows.

A school lunch program was implemented in these two communities as an attempt to improve nutritional status. Children were evaluated two years later and yielded appreciably higher Vitamin A and carotene levels and an absence of infections. Ascorbic acid levels and height and weight measurements showed no substantial change.

A more recent and perhaps more instructive study is one reported by Lee and Associates (1971). A comprehensive study of the nutritional status of two British Columbia Indian populations was undertaken. The two groups studied were the Ahousat reserve (coastal location) and Anaham (an interior reserve). Because of the location, the results of the Anaham study will be discussed here, as it bears more resemblance to Northern Manitoba locations.

Twenty-four hour dietary recalls were collected from 266 inhabitants of Anaham. In addition, information was collected on weekly food purchases, food availability, consumption and methods of preserving and preparing foods.

Lee _et al_ (1971) compared their findings with a description of previous food habits as described by Lane (1953):

> The Chilcotin hunted, fished, and gathered... gathering was clearly subordinate in importance. Probably the fishing was the more important subsistence activity, in that some type of fish were almost always available. However, much time was devoted to hunting, there were always two parts of the year when everyone fished. These were in the midwinter...and in the spring... when people were weak from the winter....
>
> The most important game animals were caribou or elk, deer, mountain goats, black bears, beavers, muskrats, groundhogs, and rabbits. Various species of ducks and geese, grouse, ptarmigan, and other game birds were hunted.
>
> Plant foods were used mainly as condiments and to vary the monotony of the diet. They were also important in times of starvation.... [1]

Lee and Associates (1971) reported that current food intake was derived from a variety of sources including hunting, fishing, gardening, gathering wild berries, and cash purchasing. Estimates of game consumption for the 80 families at Anaham for 1969, were 96 moose, 480 deer, and 3,500 lbs. of fish (mainly salmon).

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[1] Lee, M., _et al_, 1971, p. 51.

As year round hunting was permitted, very little purchased meat was used. Fish was also available year round - salmon in summer, trout in winter. In addition, several food preservation techniques, including freezing, drying, salting, and smoking were used. Many families have freezers and refrigerators.

Most of the Anaham residents had gardens from which they obtained potatoes, and to a lesser extent corn, beets, peas, turnips, cabbage, onions, and lettuce.

Two stores were available in the Anaham community while William's Lake was also accessible as a source of purchased food. Commonly purchased foods were:

Flour, white, enriched (25 - 100 lbs./month)
Sugar, white, granulated (25 - 100 lbs./month)
Milk, evaporated or powdered
Breads, cookies, cornflakes, oatmeal, crackers, macaroni, potatoes,

Side of bacon, bologna, weiners, cheese, eggs,
Peanut butter, jam, soft drinks, Freshie, potato chips, candy,
Apples, oranges, vitaminized apple juice, canned fuuit,
Margarine, lard, beef fat.

There was a limit to the quantity and variety of foods available to be purchased due to:

1) relative inaccessibility of the area thereby creating high transportation costs and thus higher food costs, and

2) lack of competition in local marketing system.

It is important to move from food habit patterns of these people to their nutritional status. This information may be instructive as to the pattern evolving in remote communities in Manitoba.

Table 6 and Table 7 contain mean nutrient intakes for the population under study. These tables also illustrate the number of individuals with nutrient intakes less than two-thirds of the Canadian Dietary Standard (list of recommended daily intakes of nutrients to maintain health among a majority of Canadians).

Intakes which fall below 2/3 C.D.S. are considered to be in the critical range.

Caloric intakes by Anaham children were consistently below the C.D.S. by 15% to 25% with nearly 50% of children and adolescents falling below 2/3 of the C.D.S. Adults at Anaham also had inadequate caloric intakes.

Protein intakes were generally adequate in all age groups, a reflection of high intake of game and fish.

Calcium intakes in all cases closely approximated the C.D.S. though 1/3 to 1/4 of children obtained less than 2/3 C.D.S. These findings reflect a low intake of milk and milk products. A significant percentage of calcium intake was supplied by meat, fish, poultry, and legumes, which are not rich sources of this mineral.

Teenage girls exhibited poor intakes of iron with 61% of the sample falling below 2/3 C.D.S. This finding is cause for concern because anemia at this stage reflects later on nutrition during pregnancy.

Of the total population, 45-70% had intakes of Vitamin A below 2/3 C.D.S., the teenagers exhibiting the poorest intake. Vegetables were an important source of this nutrient. Increased use of vegetables, milk and fruit would improve this nutrient intake.

The intake of the B Vitamins (thiamine, riboflavin, and niacin) was adequate in almost all cases, reflecting a good intake of cereals and grains.

There was a great variation in ascorbic acid intake, with most of the population meeting the C.D.S. requirement. Adult females had most difficulty fulfilling requirements. Canned milk was a significant source of this nutrient, with fruits and vegetables supplying a less significant amount.

Lee and Associates (1971) summed up their study with recommendations that traditional food habits be retained as far as possible. This is particularly important for retaining adequate sources of protein and calcium. Milk, fruit and vegetable consumption should be increased while intakes of refined carbohydrates (candy, sugar) should be de-emphasized to prevent further detriment to dental health.

A recently released study by Nutrition Canada (1973) indicates that the nutritional status of the Indian population is at high risk in many instances, as shown in Tables 8, 9, and 10. All physiological age groups under study across Canada exhibited a number of serious nutrition problems. These are particularly notable when results are compared with the general population. Because a detailed breakdown by region has not yet been released, no precise information on nutritional status of Manitoba peoples is available. (Expected date of release is end of June, 1974.) Unfortunately, because Canada was surveyed by region, no northern Manitoba inhabitants were included in this sample. Data will be available for northern Saskatchewan and Alberta.

In general, the Nutrition Canada results, which indicate a high risk of inadequate intake of iron, calcium, Vitamin D, Vitamin A, ascorbic acid and in some instances protein and the B Vitamins, support the findings of previously cited studies. When such data as seasonal variation, and actual food consumption data becomes available from Nutrition Canada, solutions to these problems may become more evident (at least the need for solutions should already be evident).

B. MANITOBA PERSPECTIVE

No published data on food habits or nutritional status of northern Manitoba inhabitants is available at the time of writing.[2] However, a few records of food habits of northern Indian peoples have been retrieved. In addition, information has been solicited from two persons who have lived in northern remote communities. From this information, a projection of nutrition problems and implications of lifestyle changes will be made.

In 1967, the Faculty of Home Economics, University of Manitoba, undertook a comparison of food habits and nutrition in Fort Alexander, a non-isolated reserve located a short distance from Pine Falls, and Split Lake, a more remote community located 90 miles from Thompson.

The diets of residents of Fort Alexander contained some "traditional" land foods, but can be more accurately described as "modern" or "urban". Wild game had largely been replaced by purchased domestic meat and bannock by bakery bread. The diet was generally more diverse in nature than that typical of more isolated areas. Foods consumed in Split Lake included "traditional" items such as wild game, fish and bannock, and supplementary purchased foods such as tea, lard, sugar, sweets, canned evaporated milk, potatoes, onions and canned foods.

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[2] Dr. Judy Sayed, Nutritionist, is currently involved in a Nutrition Survey of Pre-School Children in Cross Lake and Garden Hill in a Joint Medical Services, Department of Indian Affairs and University of Manitoba (Faculty of Medicine) Study.

Thompson (1967) characterized typical meal patterns for each community as shown in Table 11, p. 44.

Snacking was common, particularly in Fort Alexander and among children. Snacks mentioned by these children included bread with jam, prepared cereals, milk, tea, pop, ice cream, pies, cookies, and fruit. Lunches were supplemented with pop, potato chips, and chocolate bars.

Split Lake children reported fewer snacks consisting of bannock and jam, fruit, cookies and chocolate bars.

Twenty-five food records from Fort Alexander and twenty-nine food records from Split Lake were analyzed for nutrient content. Results of this analysis are shown in Table 12, p. 45.

TABLE 11 ESTIMATED MEAL PATTERNS IN FORT ALEXANDER AND SPLIT LAKE*

Meal	Fort Alexander	Split Lake
Breakfast	Bread with butter Porridge or prepared cereal Eggs or meat (every 2nd day) Fruit (once a week) Coffee or tea Milk (frequently for children)	Bannock with lard or butter Porridge, Pancakes, cereal Eggs or meat (every 2nd day) Tea with canned milk and sugar
Lunch	Bread with butter Meat Potatoes Vegetable or soup Milk (for children) Dessert	Bannock with lard or butter Meat (fish, stew or macaroni) Tea with milk and sugar Canned fruit (once a week)
Dinner	Bread with butter Meat Potatoes Other vegetable or soup Milk (for children) Dessert	Bannock with lard or butter Fish (occasionlly canned meat or rabbit stew) Tea with milk and sugar Canned fruit (once a week)

*Thompson, unpublished paper, 1967.

Table 12

CLASSIFICATION OF FOOD INTAKE OF FORT ALEXANDER & SPLIT LAKE EXPRESSED AS PERCENTAGE OF CANADA'S FOOD GUIDE*

Median Level of Intake (%CFG)	Fort Alexander	Split Lake
Poor 40%	fruits mainly citrus	fruits mainly citrus
Low 40-60%	vegetables	vegetables
Fair 60-80%	milk	milk
Good 80% or more	meat and eggs	meat, eggs, bread

This data supports the findings of previous authors that milk, fruit and vegetable consumption are low while protein seems adequate due to adequate consumption of meat (whether wild game or purchased meat). Vitamin A, ascorbic acid, calcium, Vitamin D, and other nutrients to a lesser degree, would be at high risk due to these food consumption patterns.

Greater diversity in diets in Fort Alexander probably make meal preparation simpler but do not, at least from the meagre data available, ensure a better nutritional status. The selection of more refined high carbohydrates and empty calorie foods,[3] which are readily available in this less isolated community, lead to nutrition problems.

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*Thompson, 1967, unpublished paper.

Bossenmaier (1974) described her impressions of food habits of Cree and Chipewyan peoples in Churchill, Manitoba. These native people have undergone rapid change through influence of a dominant white culture in that community.

While the Cree and Chipewyan people live in separate communities -- beside the Churchill River on the edge of town, and Dene Village further from Churchill, respectively -- both communities have access to traditional land foods and to purchased foods from a small number of stores.

The diets of both communities depend largely on wild game, including moose, caribou, rabbits, ducks, geese, ptarmigan and various kinds of fish, as sources of protein. While there are seasonal variations in the kind of game animals or fish to be found, there appears to be some meat available all year round.

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[3] Foods which have a low nutrient per calorie ratio.

Bossenmaier (1974) stated that,

> With regard to the importance of caribou and moose in the diet of the native people in Churchill, it seems that nobody would actually starve without them, but that they would certainly have a poor quality of diet.

It was further clarified, that there were differences in the lifestyle of the two groups. The Cree, who coincidentally have been exposed longer to the influence of the white people, continue to hunt for large animals, while the Chipewyans have moved much more rapidly away from traditional food gathering.

Rabbits, ducks, geese, ptarmigan, and grouse are also used in the diets of these peoples.

The Chipewyans apparently consume a large amount of fish, shipped in frozen from Tadoule Lake. Again, the Cree have retained their practice of fishing in nearby rivers both in winter and in summer. It was noted that fewer fish are available for fishing, perhaps due to increased water pollution and an increase in the number of beluga whales.

Cooking methods usually used are boiling and frying, though the Cree women have introduced more variety in their cooking (perhaps due to longer exposure to non-Indian culture). All parts of the animal are used in some way, so that little waste results.

Food preservation techniques are limited to rather primitive methods, such as drying and smoking.

Wild plants were mentioned briefly as an addition to the diet. Bake-apple berries, blueberries and Labrador tea were mentioned but do not appear to be used to any great extent.

Purchased foods, including meat (pork chops, bacon, bologna, sausage), tea, sugar, canned evaporated milk, lard, flour, baking powder, salt and salt pork, supplement the traditional foods. Other foods which may be used by some families (it is difficult to generalize) include macaroni and cheese dinners, canned stew, spaghetti, baked beans, eggs, packaged sandwich meat, peanut butter and cookies. Fresh fruits and vegetables (other than potatoes) and dairy products are apparently least common.

Bossenmaier (1974) reports food habits not unlike those of other reports,

> The children buy a good deal of candy and soft drinks, and use much sugar in their tea. On the other hand, older people tend to eat few sweets and do not care for jam, jellies or canned sweet fruit.

The observation regarding high intake of refined carbohydrate foods and low intake of fruits, vegetables and dairy products is in keeping with observations of other researchers: high risk for iron, calcium, Vitamin A, ascorbic acid deficiency but generally adequate protein intake.

Lederman (1974), reported on food habits of a more isolated family in northern Manitoba. The diet of this family reflects a greater removal from urban culture through its high reliance on land foods including moose, beaver, spruce hens, ducks, geese, ptarmigan, muskrat and rabbit. In addition, fish is available and used year round by this family. Some wild plants in season supplemented this diet. Mooseberries, raspberries, blueberries, huckleberries are used fresh as well as in jam, pies, or wine (mooseberries). Mint, Indian tea, and Labrador tea were used in beverages and also as medicine.

Fewer purchased foods supplement this diet, but include oatmeal, sugar, powdered milk, cocoa, coffee, tea, raisins, lard, flour, macaroni, spaghetti, rice, yeast, salt, pepper, cinnamon, baking powder, instant potatoes, dry soups, canned soup, onions, beans, spork and sausages.

For the most part, fruits, vegetables and dairy products are excluded from this diet. It would also appear that many of the highly refined "empty-calorie" foods are consumed in lower amounts than in less isolated communities. This is a positive aspect relating to the nutritional status of this population.

While very little more data relating to diet or nutritional status per se is available, before moving to conclusions, a number of other factors should be discussed because of their direct or indirect influence on nutrition. These factors include:

1) food prices, quality and availability through retail outlets in remote communities,

2) health care,

3) housing (particular emphasis on food preparation, storage, eating facilities),

4) water supply, and

5) poverty.

1) Food Prices, Food Quality, & Availability in Retail Outlets:

It is well documented (Manitoba Price Statistics, 1974)[4] that food prices are appreciably higher in more remote areas of northern Manitoba. High transportation costs, low turnover of goods, lack of competition and many other factors relate to these high prices. Unfortunately, these high prices occur in communities which can least afford to pay them, thus creating not only further financial problems, but also increasing the risk of poor nutrition. It should be noted that nutritious foods are not necessarily the most expensive but that consumer ignorance of the nutrient content of foods often leads to poor food purchasing decisions on the part of low income shoppers.

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[4] Manitoba Bureau of Statistics, Retail Food Prices Index, January 1974.

Food quality is perhaps of even greater concern because it relates to the nutrient value (that is, nutrient retention is directly related to storage and handling conditions, packaging, etc.) and indeed to the safety of the food (microbiological degradation may result from poor storage, handling, etc.). Fels (1973) reported very poor conditions in stores in Garden Hill where she found packages coated with dust, and in many cases broken, with contents exposed to flies, mice, etc. Eggs were stored at room temperature (a hazard for microbiological spoilage), bread was stale, and fresh fruits were stored above a heat vent. These factors are but a few mentioned in this report.

Observations made in a South Indian Lake store in February, although not as deplorable as those mentioned above, were less than desirable. Fresh fruits and vegetables (only a few were available) were standing at room temperature and thus had started to mold. This spoilage of food affords a lower intake of nutrients but also leads to gastrointestinal problems which are mentioned in many medical reports from these communities.

Food availability in the north is also less than desirable. One factor, of course, is isolation and lack of easy accessibility in some seasons. However, it would appear that more adequate planning on the part of stores in ordering supplies could eliminate much of this problem. There is, for example, no excuse for running short of staples such as flour, as has been reported in at least one community. The lack of competition in many communities may also make food availability a greater problem.

While there may be justifiable reasons for inflated food prices and lack of variety of foods sold in the northern remote communities, there is no justification for selling poor quality and thus less than healthy food. It is the right of every person, wherever he or she may live, to have a healthy and safe food supply. As lifestyles change toward a greater reliance on purchased food, it will become increasingly important for consumers to demand and receive a wide variety of nutritious foods of sound quality at a price which is reasonable. Otherwise, with a shift away from a major portion of nutrients coming from "traditional" foods to purchased foods, existing nutrition problems will be intensified.

2) Health Care:

Health care programs in northern remote communities tend to center around a nursing station which employs a full-time nurse(s). Smaller remote communities, for example, South Indian Lake, do not have a resident physician or hospital facilities. Thus patients with severe illnesses must be transported to Thompson or Lynn Lake for adequate medical treatment.

As has been stated earlier in this paper, the nutritional problems of these peoples are evident and often exert a synergistic effect on other medical problems, e.g., infections, tuberculosis, gall bladder disease, diabetes, gastroenteritis, and gingivitis are examples of diseases which relate directly to poor nutrition and appear frequently in the medical records of native populations.

In many cases, nurses have inadequate training in nutrition. The off-shoot of this is that while a nurse is probably adequately trained to treat the disease once symptoms are discovered, he/she does not have the knowledge of nutrition relating to causes and thus prevention of the problems. This problem applies not only to medical personnel employed in remote areas, but to the basic training in all areas.

Another factor of importance is that the workload and the extremely high employment turnover of medical personnel makes long term programs for prevention almost impossible.

One of the health problems of great concern is the very high infant mortality rate. Cole (1971) released statistics comparing the Indian and white population of Manitoba (Table 13, p. 55).

These statistics are a reflection of many factors, one of which is nutrition. The life-long pre-pregnancy and prenatal nutrition significantly affect the outcome of pregnancy, not only for the infant but also for the mother. The higher rate of infant mortality in the Indian population can be accounted for, at least partially, by inadequate fetal nutrition (poor maternal diet and poor prenatal care for mother) as well as to the high incidence of infections. Infection is of particular concern in bottle-fed

Table 13

RATES OF BIRTH, INFANT MORTALITY,
MATERNAL MORTALITY FOR MANITOBA INDIAN
AND WHITE POPULATION*

Birth Rate	40/1,000 population	18.5/1,000 population
Infant Mortality Rate	39/1,000 live births	22/1,000 live births
Maternal Mortality Rate	15/10,000 live births	2.2/10,000 live births

infants where adequate sterilization cannot always be assured (particularly in environments which have low levels of sanitation). One possible effect of the trend away from traditional lifestyles to more urban or technological lifestyles may be a shift from breastfeeding to bottle feeding to emulate the infant feeding practices of the white population. This would have serious negative effects on the health of the infant. First priority should be given to assuring adequate nutrition in fetal and infancy stages because of recent documentation of a relationship between malnutrition and sub-optimal mental development. This factor is significant, since the rapid changes occurring in remote communities are imposing on natives the responsibility for making decisions in a more technologically demanding setting.

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*Cole, 1971.

3) Housing Facilities (Cooking, Storage, Eating Facilities):

In most communities in northern Manitoba rapid building of new houses is occurring. However, to a large degree, housing conditions are primitive in nature. For example, running water is non-existent in most communities.

Wood stoves are the major cooking appliances, while refrigerators, and freezers are almost non-existent. Since perishable foods cannot be kept, the homemaker is forced to shop often for such items. Food storage is often located in a tent raised off the ground to prevent dogs from scavenging.

Hopefully, improvement in housing conditions will not only aid in food preparation and storage but also in raising the level of sanitation. All of these factors should lead to an improvement in nutrition. This statement presupposes that education in the use of new applicanes, new foods and home management skills will accompany housing improvements.

4) Water Supply:

Quality of water has been related to many health problems including gastroenteritis and typhoid fever. Water is also a source of one nutrient, fluoride, which at a level of 1ppm has preventative effects on dental caries and possibly osteoporosis. For these reasons, drinking water should have fluoride added if it does not contain adequate natural sources.

As northern Manitoba undergoes more rapid development and population increases, the water supply will become more contaminated. Care should be exercised to test and ensure a safe water supply wherever people settle.

5) Poverty:

Lack of money and inadequate knowledge of nutrition make it difficult to achieve optimum nutrition. Traditional food habits of the Indian population have provided at low cost, fairly adequate protein and indeed many other nutrients. If the inhabitants of the remote communities move away from hunting and fishing for food to a wage economy, it will be impossible for them to buy adequate nutrition (particularly protein) without a great deal of information regarding the appropriate foods to buy and how to use them. When it is recognized that middle income families in more fortunate locations have difficulty achieving adequate nutrition, it becomes evident that this problem would be exaggerated in the remote community where food prices are higher and nutrition knowledge is lower.

NUTRITION PROGRAMS IN MANITOBA

(With Special Reference to Northern Manitoba)

In attempting to describe the status of nutrition programs in Manitoba, several departments within government, both Federal and Provincial, have been contacted.

On January 22, 1974, an interdepartmental Committee on Home Economics met to discuss program aims and objectives. Departments represented at this meeting were Department of Northern Affairs, Department of Health and Social Development, Department of Agriculture, and Department of Education. Results of this meeting and contact with these departments have been helpful in compiling the following report on nutrition services in northern Manitoba. In addition, Home Economists with the Department of Indian Affairs and Northern Development were interviewed to obtain information regarding Federal Government programs which affect northern Manitoba peoples.

Before reporting specific details of on-going and projected programs, some general comments can be made about the nature of nutrition programs in the North. In no case is there a fully qualified nutritionist in any of the above listed departments (with the exception of the Department of Health and Social Development) who is involved at the policy setting or program planning level. As a result, there is no nutrition policy for northern Manitoba or for any other part of the province for that matter. Nutrition, however, is included or at least proposed in various home economics programs where it can be integrated into these programs.

It is essential at this time to define the terms "home economist" and "nutritionist". A home economist is a professionally trained graduate of a university program in Home Economics which includes comprehensive training in the social and biological sciences with application to the areas of family development and management, foods and nutrition, and clothing and textiles. The graduate from this program may have elected to major in one of these three areas or to be a "generalist" who has studied extensively in all three areas. On the other hand, a nutritionist who is also professionally trained, usually at a Faculty of Home Economics, has elected to specialize in the field of nutrition studying in detail the metabolic, sociological, psychological, educational and public health aspects of nutrition. This specialization usually involves further training in a graduate degree program or an internship, preferably in a community nutrition or a public health nutrition program. This distinction is fundamental to evaluating the on-going and proposed role of professionals in nutrition programs in the north.

From an analysis of current programs in the north, it is evident that there is no provincially sponsored nutrition program at the present time (March 1974) but that at least one experimental program is in progress and more are proposed in the near future. A more detailed analysis by department follows.

A. PROVINCIAL PROGRAMS

Department of Agriculture

Because the Manitoba Department of Agriculture does not have jurisdiction north of the 53° parallel, there are no programs sponsored or planned by that department in the remote northern communities currently under study.

Effective April 1, 1974, many of the services of the Department of Agriculture Home Economists (including one nutritionist) will come under the Department of Health and Social Development.

Department of Health & Social Development

This group of Home Economics Specialists will have province-wide responsibilities for the direction and quality of Home Economics programs through an integrated delivery system of Home Economists in the Department of Agriculture, Department of Northern Affairs, and Department of Health and Social Development.

The nutritionist with this resource group will have as responsibilities:

1) training and staff development,
2) education and teaching resources development,
3) program development.

These services are overdue and will be a valuable factor in future success of nutrition programs in the north. However, it is unfortunate that one person is charged with all of these responsibilities for the entire province. In addition, it is not clear that each of the departments with whom she consults will in fact put into practice the programs she proposes. The lines of authority and responsibility are not, at this time, clear.

This new Home Economics Service Directorate does bring with it, for the first time in Manitoba, the opportunity for co-ordinated programming.

Department of Education

A Home Economist with the New Careers Division has taken responsibility for developing proposals for nutrition programs which are planned to extend into the northern areas.

Currently, a pilot study to examine the feasibility of a school milk program is underway in South Indian Lake, Brochet, Granville, and Leaf Rapids. A report on the findings of this study are expected in the near future.

It was proposed to have one and possibly two nutritionists or home economists employed as a project monitor and training advisor for nine paraprofessional workers who would implement the milk program and an accompanying nutrition education program in each community. These indigenous workers would be trained in home-making skills related to nutrition and diet. If the pilot study proves to be successful, it is projected that the School Milk Program would be introduced in thirty-nine "frontier" schools in September 1974. At the time of writing, one home economist had been employed to co-ordinate this program.

At the proposal stage is yet another program, a Hot Lunch Program for Schools. It is planned that four schools (one of them to be in the north) will participate in a feasibility study to determine if the program will be implemented.

A Pre-natal Nutrition Counselling and Food Supplement Program is also under study by the Department of Education. This program has as its objectives:

1) to improve the nutritional status of women of child-bearing age,

2) to decrease the mortality rates of infants born in northern Manitoba,

3) to improve the nutritional status of infants and pre-school chidren,

4) to increase the number of healthy children born with full mental and physical capacities, and

5) to increase the understanding of nutrition and the knowledge of how to practice better nutrition among pregnant women and women of child-bearing age in the socio-economic environment.

This program will apply to pregnant women and women of child-bearing age in the 37 communities of the Frontier School Division. This proposed program is designed on the basis of a highly successful scheme at the Montreal Diet Dispensary in Montreal. The essential differences in the proposed program is the use of indigenous paraprofessional women who will be trained by a nutritionist. The Montreal Diet Dispensary, on the other hand, employs professional nutritionists to deliver the service. The selection of a qualified nutritionist and a sound training, and continuing in-service training program for the paraprofessional worker should be stressed.

Department of Northern Affairs

A Home Economist with the Northern Manpower Corps reported that nutrition had been integrated into the Home Visitor Program which has been implemented in Leaf Rapids, Thompson and Churchill. Basically, the nutrition component consists of suggested topics of discussion, e.g., food shopping and budgeting and meal planning for better nutrition. Nutrition is only one part of a larger home economics thrust in the program. It is not known the content or stress given to nutrition during the training of home visitors whom it is believed are women indigenous to each community. The overall program has been organized to attempt to help relocated families integrate into new communities, and to make adjustments from a hunting/fishing/trapping livelihood to a wage economy. The importance of education in management as it relates to the home, family, food buying, etc., cannot be overemphasized. There appears to be no record of evaluation of the success of this program.

The Department of Northern Affairs has proposed (and is currently studying a program) to meet some of the needs of remote northern communities which are undergoing rapid modernization through improved communications, housing and community development, while at the same time undergoing deterioration of traditional lifestyles. Faced with this set of circumstances, it has been proposed that a home economics program could serve the following objectives:

1) to provide a paraprofessional home economics extension service to all northern residents including specifically:

    (a) providing a domestic and family counselling support service to employment and housing programs,

(b) providing domestic life skills training to northerners caught up in the process of rapid modernization,

(c) making available practical home economics training and information to all northern residents who desire it.

2) to facilitate, through the employment of indigenous northerners as home visitors, the participation of northern people in the process of northern modernization.

These objectives will be facilitated by the signing of the Western Northlands Agreement. While nutrition services have not been written into this proposal, it must be assumed that nutrition is inherent in such a program. Two home economists have been requested to initiate this program.

B. FEDERAL PROGRAMS

Department of Indian Affairs & Northern Development

Not unlike the programs offered and proposed by provincial departments, home economics programs undertaken by Indian Affairs also involve the training and use of paraprofessional workers in each community.

A Home Economist with this department stated that at the present time, this is the only effective way to reach families in remote communities where professionals are generally reluctant to work.

Initial training of the Indian paraprofessional workers takes place at a "Home Management House" in Winnipeg (37 Cornish Avenue). Approximately 20 women from various reserves around Manitoba spend about one month in training at this house. A home economist teaches these women basic skills in homemaking including cooking, serving, and handicrafts. The women then return to their home community, hopefully to pursue development of programs in the community.

Three additional home economists have recently been employed to be available in the communities with these trained paraprofessionals providing them with further resource information and materials. The availability of a professional resource person should improve the service of the paraprofessional through continued in-service training and encouragement.

Unfortunately, financing has been planned only for short term employment of professional resource home economists. This factor discourages long term program planning and evaluation of effectiveness of programs.

One further component planned by the Department of Indian Affairs is the development of audio-visual aids which could be used by and specifically designed for work for paraprofessional workers.

No long range plans for nutrition programs were outlined by this Department.

RECOMMENDATIONS

1. Northern populations should be encouraged to retain many of their traditional food habits, particularly their consumption of game animals and fish because these provide significant portions of protein, calcium, and iron which may not appear in a more modern diet. (The cost of replacing the protein in particular would be difficult if not impossible by food purchased in stores.)

2. An increase in the variety of foods found in the diets of these people should be encouraged. Consumption of fruits, vegetables, milk and dairy products in particular should be encouraged while consumption of sweet, empty-calorie foods should decrease.

3. The two previous recommendations could be best implemented by improvement in current storage facilities and food preservation techniques. These changes would insure a safe, and adequate food supply year round.

4. In order to facilitate adjustment from traditional life-styles to newer ones, education in the areas of home management, food selection and buying, and food preparation is essential. The move to modern housing with new appliances will be difficult if not unsuccessful unless training in these areas is provided.

5. Further investigations of food prices, quality, and quantity are indicated for retail outlets in northern communities. Of primary concern is that the food supply offered must be safe and healthy. Frequent inspections of retail outlets and improved training of store managers would facilitate this health requirement.

6. Health Care programs require a stronger thrust in preventative care in nutrition practices. This means more adequate training in nutrition for nurses and an availability to each community of a nutritionist and/or nutrition resource materials. Community health workers should also be trained in basic principles of nutrition. Special emphasis should be placed on groups who are most susceptible groups for malnutrition including:

(a) pre-natal care - supplementation of maternal diet to meet increased nutrient needs of pregnancy (this should lower maternal and infant mortality rates),

(b) encourage breast-feeding of infants to ensure adequate nutrition with least hazard of death by infection in infants,

(c) encourage supplements of Vitamin D, and iron and ascorbic acid in infant diets, and

(d) pregnant teenagers should be given special attention because of the added nutritional stress imposed upon already high nutrient requirements.

7. In order to provide a better basis for appropriate dietary patterns, nutrition education could be incorporated into the school curriculum at all levels. Where home economics programs do not currently exist, they could be incorporated. This would involve training, not only in foods and nutrition, but also in basic home management skills and clothing selection and construction. Boys, as well as girls, could participate in such programs.

8. The nutrition component of both federal and provincial programs would be strengthened if there were more inputs from professional nutritionists. In addition, the services offered through various programs could be integrated so as to prevent duplication. Where the use of trained nutritionists is not feasible, appropriate nutrition education tools, such as slide-tape sets, are needed. Such tools could be developed under the direction of the Home Economics Directorate of the Department of Health and Social Development and provided in nursing stations, school classrooms, community education groups (e.g. 4-H Clubs and pre-natal classes).

In general, an effective nutrition program requires that current short term programs be replaced by long range planning and financing.

9. Because no precise data on the nutritional status of northern Manitobans is available, there is a need for further investigation of all areas covered in this paper. Perhaps more important is the need for careful planning and evaluation of nutrition programs planned for these remote communities.

CONCLUSIONS

From a review of existing literature on the food habits and nutritional status of native people living in northern more remote communities, it can be seen that inadequate nutrition is a concern.

Traditional food habits which include almost exclusively land foods, fish, game, wild plants and berries have produced problems of great seasonal variation in nutrients available and in most instances inadequate intakes of a few key nutrients, e.g., ascorbic acid. The food habits of the more isolated community have been simple rather than diverse but have afforded better than might be expected nutritional status.

As technological development and population expansion have evolved closer to these remote communities, the diet of the inhabitants shifted to some degree from traditional foods to a variety of purchased foods. The closer to white settlement and the longer the exposure to white culture, the more the diet consists of purchased food. Domestic meat has replaced game and fish to some extent, bakery bread has replaced bannock, and many additional foods have been added to the diet including soft drinks, candy, chocolate, sugar, processed foods of all types. These foods, though not traditional staples, have rapidly been integrated into the diets of these peoples. Not so with foods such as fruits, vegetables, dairy products. The nutrient deficiencies due to lack of inclusion of these foods have existed from more primitive times until today. The problems of today may be more serious because the calorie intake of the modernized Indian is so diluted by highly sugared foods which offer no value to the diet but calories.

Because the data points in all cases to poor nutrition there is a cause for concern as the northern population take on new roles in northern development. Nutrition and national development is an interesting concept to pursue (interested readers would be urged to consult Berg[5]). There is documented evidence for a relationship of nutrition to mental development, working capacity, economic potential. Nutrition takes on greater importance when northern man is viewed in his new context.

In northern Manitoba there exist many other problems which relate to poor nutrition including high food costs, poor food quality and availability, inadequate health care, primitive housing facilities, poor quality water supply, and poverty. These problems require immediate attention before inadequate nutrition *per se* can be alleviated.

Some education, intervention programs have been initiated by various government departments which include nutrition and home management. Most of these programs employ the concept of training local women as paraprofessional homemaker aides who will teach their community these new skills. All of these programs, however, lack adequate direction from professional nutritionists (only one is currently employed) which is a serious disadvantage. Co-ordination of all of these programs is evolving under the New Home Economics Service Directorate, in the Department of Health and Social Development. It is hoped that nutrition will become a stronger more directed thrust as a result of this co-ordination.

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[5] Berg, Alan, *The Nutrition Factor*: *Its Role in National Development*, Brookings Institute: Washington, D.C., 1973.

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APPENDIX 2

OBSERVATIONS OF VARIOUS NATIVE GROUPS IN CHURCHILL

Lifestyles & Diets

Mary Jean Bossenmaier

March, 1974

INTRODUCTION

Churchill, Manitoba is a much divided town. Not only are the people scattered in separate communities several miles from one another but they are of different races, tribes and cultures and hold different values and morals. Some of the people make their living as rocket researchers and have never seen a moose while others live on moose and caribou and have never seen a rocket.

The dominant culture, however, is that of the white man and all others are slowly struggling to grasp what it is all about and find where they fit in. The native people - the Cree, Chipewyan and Eskimo - are in a difficult situation right now. They have made a cultural jump that is so vast, in such a short period of time, that their beliefs and ways of thinking have not yet caught up. The Chipewyans especially are living in one world and their minds are still working along lines evolved for survival in a much different one.

This is a paper on some aspects of the way of life of the Chipewyan, Cree and metis of Churchill. It pertains particularly to the period of time between June, 1973 and the end of March, 1974.

Most of the white people in the Churchill area live and work either in the town of Churchill proper or in Fort Churchill. Those in Fort Churchill are government or army personnel. There is a Hudson Bay store in camp (Fort Churchill) that provides both a grocery and department store, a post office, a theatre, an arena, a curling rink, two churches and a club for drinking, dancing and socializing. It is seldom necessary to go down to town. Town (Churchill proper) has two department and grocery stores, two hotels with beverage rooms, the Liquor Commission, two churches, a post office and a Royal Canadian Legion Hall. The grade school is in town and another grade school and the two high schools are in camp. About half way between town and camp the road branches to Akudlik the Eskimo village. There are few Eskimos living there today though and the majority of the houses are occupied by Government of the Northwest Territories personnel. Farther down the road, past Akudlik, is Dene Village, the home of the Chipewyan people. Many of the houses are deserted now as more and more people move out to Tadoule Lake, about 150 miles west of Churchill. Besides houses, Dene Village has a band office, band hall, storage building and a new laundry room. Shopping, drinking and socializing are done in town rather than camp although several of the men work in camp. Most of the Cree live on "the Flats", along the Churchill River beside town. They have nothing communally owned, such as a band hall, to identify them as a tribe. A slow migration is underway from the Flats to new houses in town. The details of the move are sketchy but at this time many of the people who have moved to town say they are unhappy and would like to move back. Unfortunately for them, their houses are bulldozed and burnt as soon as vacated.

Change may occur quickly, but the most successful cultural changes have been slow adaptations. When people are moved from the bush to a town or from a community of friends into more modern housing, time must be allowed for the culture to catch up.

LOCAL GAME:

Although most of the men now hold steady or part time jobs, a few still depend on wild meat for food and a large number use wild meat as a supplement to their diet. Everyone talks about the decrease in the amount of wild game available but much can still be acquired fairly close to Churchill. This includes moose, caribou, rabbits, ducks, geese, ptarmigan and several kinds of fish.

Treaty Indians are not restricted by hunting seasons and are little bothered by the fact that certain animals are protected. The type and amount of game they take, therefore, is governed mainly by what is available and how far a man is willing to go to get it.

Moose and caribou are both very highly prized. In the Churchill area, most seem to be taken during the winter, moose throughout and caribou in the beginning and end. Although caribou are available in the late winter and spring, people say they are full of worms at this time and not worth hunting. These are probably the warble flies. Moose are available all year round but it is easier to get to them and pull them out of the bush during the winter when a skidoo can be used. Both moose and caribou are found farther and farther away from the town. People can still remember cars being stopped on the road between town and camp as recently as 20 years ago, but this year it was necessary to travel at least 20 miles to see them. The closest place that moose are commonly taken today is about 15 miles north of Churchill at the bottom of Button Bay. Many of the best hunters in Churchill are the Cree metis. As they are not exempt from hunting laws, there is considered to be too much of a risk of being caught in a place as close as Button Bay. Farther up the coast is North River. Most of the moose this winter came from this area, generally, several miles up river from the Bay. Harriot Creek, which flows into the Churchill River is also being hunted this winter for moose but without much success. The majority of the moose were taken late this winter, in February and March. Perhaps twenty were killed.

Caribou is preferred over moose in most cases. The meat has a better flavour (richer and less wild) and is usually more tender. Those taken are barren-ground caribou. As early as the end of September people were on the lookout for the animals moving south. Indians acting as guides at a camp on the coast about six miles north of Seal River were expecting them to start passing before the end of the duck and geese season this year. On several occasions the whole camp rushed out with guns ready only to find that the "caribou" were large geese or wolves walking along the ridge. They were expecting only single members or groups of three or four. The main herd supposedly passes farther inland. From the number of antlers and tracks in the area it is obvious that caribou have passed within a quarter of a mile of the Bay all along the coast near Seal River, but whether any were killed this year cannot be said. There are a large number of circles of stone marking old camping spots of Eskimos or Indians that people say were used by caribou hunters in the past. In January and February of this year, hunters at North River and Seal River were unsuccessful and reported no caribou seen, although they had seen well beaten trails in early January that they took to be those of caribou. In March, at least three were killed and the meat shared between at least 8 families.

With regard to the importance of caribou and moose in the diet of the native people in Churchill, it seems that nobody would actually starve without them, but that they would certainly have a poor quality of diet. One Indian man and his wife depend almost exclusively on wild game for meat, a large part of which is moose and caribou. One Eskimo family with several teen-age children is in the same position. These two families hunt out of Churchill and shoot all their own meat. Other families use the meat as a supplement to their diet.

Whenever an animal is shot, the meat is shared by quite a few families because there were several men participating in the hunt or through ties of kinship or friendship. The men involved in the hunt usually get an equal share of the animal. A friend of a hunter normally gets enough for one or two meals. With the price of meat in Churchill stores, a piece of good quality meat means a lot and is a welcome change from having to choose between a small serving of "good" meat (roast for example) or more of a cheaper meat (hamburger or minute steak). When wild meat is obtained there always seems to be a lot and the meals are never skimpy.

It should be mentioned here that it is mainly the Cree, metis Cree and white people in Churchill that hunt the large mammals. Chipewyans sometimes get meat but it is sent in on the plane from Tadoule Lake and not hunted by those in Dene Village. It is a common practice for the people in Tadoule to send meat and hides to their relatives in Churchill and these are always much appreciated. Generally, the gifts are of caribou or moose meat or fish. It seems strange that the Chipewyans who have recently come out of a life style with a very close dependence on caribou and moose should have abandoned big game hunting so completely while the Cree who have a much closer relationship to the life style of the white people in Churchill should be such avid hunters. It may be the need for things obtained from the white community that accounts for this. Few Chipewyans retained dog teams when they moved out of the bush and they have not yet accepted the concept of saving money for skidoos or more expensive guns. The Cree, however, have adopted more of the economic ideas of the white society. They buy the equipment made necessary by the increasing distance between the game and the hunter. Possibly, when they recover from the initial shock of being moved to a place where their way of life is no longer practical, and they learn more about steady jobs, saving money, care of equipment, etc., the Chipewyans will begin to do more hunting.

There are two recognized types of rabbits in the Churchill area. Both are available all year. The smaller of the two inhabits the more forested areas and changes color earlier. It may be the snow-shoe hare. Arctic hare inhabit the rocky, treeless areas just inland along the coast. Where possible, they stay close to the willows but are often seen running across the open tidal flats. In all seasons they are shot or snared. They are not considered important enough to hunt specifically, but men hunting caribou or moose frequently carry snare wire. Waterfowl and ptarmigan hunters will shoot at any rabbits they come across. This fall, five were shot at Seal River but during the winter months all rabbits become scarce and virtually none were killed.

Ducks and geese are plentiful in the right season, easy to hunt, with no expensive equipment needed, and are a favourite of both Cree and Chipewyan. Both groups spend much time hunting them spring and fall. The birds are considered much better eating when they first arrive in the spring, perhaps because they have not been available all winter or because of the different food they have been eating. In the fall it is common to eviscerate a goose and find crustaceans, and the entire cavity purple from blueberries.

Of the geese, the giant Canada goose is the prize. The smaller Canadas, blues and snows and white frosted geese are so common that at times hunters allow them to pass and wait for the giant Canada geese. Ducks are more abundant before the geese and are seldom hunted specifically after that. They are usually shot by men really after geese but are often the only bird brought down. So much time is spent hunting geese that there are several interesting techniques used. It is possible to simply take a shot gun, sit in a ditch and shoot when the birds fly over. In the fall especially, the geese seem to have little fear of men. They often land beside the road or on the railway tracks to eat gravel and fly low over the outskirts of town. One of the more interesting techniques involves the use of decoys. For the blue and snow geese pieces of white cloth are strewn in an open field. For Canada geese, mud decoys are made. A large rock in a clump of earth is the body. A stick placed upright at one end with a clod of mud at the top is the neck and head. At first it appears that the arrangement of the decoys is random but care is taken to have a central clump and several outside "guard" decoys.

The heads of the decoys must always be faced into the wind. With the mud type, the neck is simply pulled out and stuck in another side of the body. Geese that have been shot are propped up in front of the hunters. If a blind is used it is just driftwood and scrub pushed together. The geese are frequently called in. Commercial duck and geese calls are rare. Instead, the men are very proficient with their own voices and know numerous different signals.

Much is known about the birds hunted. Morning and evening are the favourite hunting times as the birds are on the move. The tides affect their movement. The geese follow the ridges and eskers wherever possible.

People go up the Churchill River as far as Harriot Creek after geese and ducks. A hunt is often the basis for a family or group outing. Boats (20 ft. canoes) and motors are owned by many Cree. Most of the trips are just for the weekend. Between the Bay and Harriot Creek there are numerous cabins. If these are not owned or borrowed, a tent is used. The women and children appreciate the chance to get out of town, away from regular routines and do something exciting.

Most Indian hunters take great care to find the birds they drop. White hunters from the south frequently shoot for more geese than their limit permits and the guides collect those and take them back for Indian families in Churchill. At Seal River this fall, three Americans left close to sixty birds behind when they left. These were frozen by the guides.

The most common kind of duck shot this year was the pintail. Large numbers of teal, mallards and black ducks were also shot. The mallard and black ducks are preferred because of their size. The guides at Seal River shot, on the average, two ducks per man per day, although it would have been possible to shoot many more, and about the same number of geese. These were consumed in one or two days after being shot. When meat is available in such quantity, that the carcasses are not picked clean and much meat is left on that would be eaten at other times. Men hunting on the weekends and close to Churchill took about 15 ducks per man per weekend and perhaps 5 geese. These were carried back to town and put in freezers. Many are given away, especially to families where for some reason the man does not hunt. The size of a serving is definitely affected by the amount of meat that is available. During the spring and fall, half a large goose or one large duck may be cooked for each adult. In the winter, one goose will serve two men, wives and two children. During the hunting season only meat may be eaten at the meal while when meat is more scarce, potatoes, vegetables, bannock or bread will be used to fill in.

Many people find reason to travel the coast in boats. In the fall particularly, there are large numbers of sea birds - eiders, merganzers and loon. These are seen inland singly or in family groups during the spring and summer but the eiders seem to congregate on the ocean only in the fall. Although they are avidly chased and shot at there are virtually none killed. On one trip to Seal River, three canoes spent close to ten minutes in each of four or five places, circling at the birds as they dove and surfaced. None were shot. Few greater or lesser scoup are taken, either.

The ptarmigan is a most remarkable bird. All year round there seems to be an abundance of these unbelievably unafraid birds. In the fall and winter they are seen in groups of as many as 15. It is possible to walk very close to them before they become alarmed and several birds may be shot, one after the other, before the flock finally flies off. They frequently wander into the front yard of the Flats and Dene Village. In the late summer and fall, the young ones may be run down on foot even though they can fly. Very large numbers are killed each year.

One or two spruce grouse are seen each year. Their numbers are small, however, so they are unimportant.

A very large amount of fish is consumed, especially by the Chipewyans. Again, these are not caught locally by the people but are shipped in frozen from Tadoule Lake. The majority are whitefish although lake trout and northern pike, all of enormous size are also sent in. Several years ago, Chipewyans set nets in Hudson Bay and the Churchill River. Since they have been moved to Dene Village and far from the water they have abandoned this practice. Cree, metis Crees and white people still fish in the Churchill River winter and summer. A few use lines. The people who are really serious use nets. The places where Goose Creek, Harriot Creek and Fishing Creek run into the Churchill River are the favourite angling places but people fish off the Harbour Board dock and out of small boats all along the river. All through the ice free season, nets are set at the mouth of the river and along the coast of the Bay close to the river. In the river the nets are set in fairly deep water and must be checked by boat. Along the coast, the nets are set right on the gravel beaches and are covered by water only at high tide. They are checked at low tide when the nets are dry. Cisco, arctic char, whitefish and northern pike are caught in the nets with whitefish and cisco predominating. In winter, holes are chipped in the river ice and either net or lines are used. Much less fishing is done in the winter. Several of the long time fishermen have noticed a steady decrease in the number of fish they are catching. Where a man could once catch about twelve fish a day in the summer, now he has an empty net after some tides and averages less than three quarters of that. They blame it on the pollution of the river and the increase in the number of beluga whales that eat the fish.

FOOD PREPARATION:

Most foods eaten by the Cree and Chipewyan are prepared in one of the standard ways. Generally speaking, the Cree cooking shows the most variety, both in methods of cooking and the kinds of food prepared. Boiling and frying are the two most common cooking methods for all foods. Caribou and moose are usually either fried or boiled. Frying is done in lard bought in the store. Rarely, the grease left over from frying salt pork or bacon is used. To boil meat, the pieces are left uncut. Salt is usually added but nothing else. Stews are also very common. The meat is cut into small pieces and boiled with onions, macaroni, salt pork, carrots, potatoes and turnips. None of these are requirements, however, and are often left out even when available. The thickening is the last step. Oatmeal is most commonly used but instant mashed potatoes are a good substitute. Flour and water thickening is rare. The general rule of thumb seems to be to use whatever is available. Most of the woman (and men) are very good cooks. In many cases, there is very little food available to work with.

Leftover meat is left in the pan or water and eaten cold whenever anyone feels hungry. Stews are saved and heated for the next meal. As little distinction is made between different foods for different meals, leftover food does not last long. Meat for breakfast is better than porridge or nothing.

Almost all parts of the mammals are used for food. Besides the regular pieces that a white man would use for food, parts like the nose and bones are saved. Marrow from bones is eaten raw or cooked or the bone may be boiled in a soup or stew to give it flavour. The marrow of the upper thigh bone is preferred because it is more solid and dry. Other marrow is more gelatinous.

Waterfowl and rabbits are boiled and stewed in a fashion similar to that used for caribou and moose. Duck and geese are the only kind of meat that I have seen roasted in the oven. At least one Chipewyan family and numerous Cree families roast waterfowl by placing the bird in a large pan with no water and cooking it at 375° for about an hour and a half. At a birthday party for a Cree man, dressing was prepared. Bread, lard, salt, pepper, onions, raisons, apples, and various other spices were mixed and stuffed in the body. Some people prefer to leave the heart and lungs in the bird when it is cleaned and these are roasted too. When they are removed during the cleaning, hearts and livers are fried. Gizzards are always removed. They are split open, the gravel removed and the tough part on the inside pealed off. They are either fried or boiled. It is interesting to note that all birds (waterfowl, ptarmigan and goose) are plucked and not skinned whenever possible, even for stewing and boiling. One woman believed that the flavour is all in the skin and fat but most replied that it just wasn't done. Whatever the reason, more food value is obtained through this practice. Necks and heads are usually discarded or fed to the dogs but may be boiled.

Cooking methods for ptarmigan and grouse are, again, the basic frying or stewing.

Fish, regardless of kind are almost always boiled with salt. Rarely, they are fried in lard. The fish are first scaled and gutted and cut crosswise in three or four pieces. Leftover fish is either reboiled or fried or made into fish patties. For these, the cold fish is crushed and the bones removed. Onions may be added. Flour is mixed in until the consistency allows the mixture to be pressed into patties. These are fried in lard. The broth in which the fish was boiled is consumed cold with salt and pepper added. It is called fish soup.

Both fish and meat from moose and caribou are dried and smoked at Tadoule Lake but neither was observed in Churchill. One black bear was smoked and resulted in the death of a woman and the sickness of many others.

Besides the food that is obtained from the animals, the people can also utilize several other parts. Hides are saved from caribou and moose. Many are sent out to be tanned in commercial houses in the south but home tanned hides are much preferred as they are softer and stronger. There are several women in Churchill (both Cree and Chipewyan) who tan hides and many in Tadoule and the numerous small settlements along the railway line. They use a method in which the hide is smoked, stretched, scraped to remove flesh and hair, rubbed with brain and smoked. Although seldom seen today, some people still know how to obtain sinew for sewing from the carcasses of moose and caribou. A piece is cut from the center of the back, running from the head to the rump, dried and separated into fibres.

Numerous other animals are found in the Churchill area. These include the whale, seals, polar bears, foxes, arctic ground squirrels, whistling swans, sand hill cranes, many shore birds and invertebrates. These are seldom collected for food. Several men recall relatives or friends attempting to eat swans and cranes, and the stories are apparently bad enough to curtail any more attempts. Whales have never been used by the Indians for food. A few are taken each year for dog food. Seals and invertebrates from the bay are similarly left alone. The ocean does not seem to hold much attraction for the Indians as far as food is concerned. Ground squirrels, foxes, wolves, beavers, etc., are shot and trapped for their furs. Polar bears are usually shot only in self-defense or because they get to be too annoying. It is very rarely that a black bear is seen in this area but one did show up last spring and was shot.

There are few native plants that are used for food. A berry known locally as the baked-apple berry is eaten raw. In some places, blueberries grow and are collected but they are very small and sour. It is difficult to pick enough to do anything with and the flavour is such that the result is hardly rewarding. Labrador tea is very plentiful and a few leaves added to a regular pot of tea greatly changes the flavour. However, no Indians seem to use it.

PURCHASED FOOD:

The grocery items that are considered most essential are meat, tea, sugar, canned (evaporated) milk, lard, flour, baking powder, salt and salt pork. This is what the people from Tachoule Lake get from the town. They usually buy some meat for variety, such as pork chops, bacon, bologna, sausage, etc. Tea is considered an essential at meals, work breaks, when visitors come over, and before going to bed. Children begin drinking tea before they start school. Everyone uses much evaporated milk and several (2-5) teaspoons of sugar per cup. White sugar, not brown, is the rule. Coffee plays a very small role and is always instant. Again, much canned milk and sugar is used. Evaporated milk is the most common form of milk and under the circumstances it is the most practical. Fresh milk comes in bags and is often sour and quite expensive. Canned milk is more nutritious and can be used for a greater variety of purposes. It is diluted with water for feeding babies.

Sliced white bread is bought by the Indians in town. Those in Tadoule or out trapping and many in town still prefer to make bannock and this serves as a bread substitute. To make bannock, flour, baking powder, and salt are combined and lard is crumbled in. Water is added and the mixture is kneaded until it is the consistency of dough. Sugar, cinnamon, raisons, cheese, or chopped apple may be added. However, bannock is seldom seen with anything extra. Depending on what cooking facilities are available, the dough may be baked in the oven, fried in lard in a frying pan or wrapped around a stick and held over an open fire. It is eaten with lard or butter or used to soak up the liquid from soups and stews.

Butter is usually purchased instead of margarine even though it is more expensive. The Chipewyans, especially, frequently use lard instead of butter. Lard is used for frying, on bannock, and a piece is often eaten with meat (much as some people eat mint jelly with lamb). Salt pork is fried and eaten as bacon, or added to soup and stew. The grease is seldom saved but bannock or bread may be fried in the drippings immediately after it is fried.

Beyond these basics, it is difficult to generalize about purchases. Other rather common foods are boxed macaroni and cheese dinners, canned stews, spaghetti, baked beans, eggs, packaged sandwich meat, peanut butter and cookies. Fresh vegetables, fruit and dairy products are least common, although a lot of potatoes are consumed.

The Cree people usually have more food in their homes at any given time than the Chipewyans. Some houses in Dene Village have nothing but tea and bread on payday before their cheques are collected. On the other hand, some houses have full refrigerators and even such things as ice cream and pickles. The reason for such discrepancy is usually the amount of drinking the man and woman do. The man collects his cheque and gives varying amounts of money to his wife for bills, food and clothing. He spends the rest at the beer parlour and liqour commission. If the money given to the wife is not enough, or if she uses too much of it to drink herself, there will be less food in the house.

Many of the Indians could eat better if they understood how to shop. Wild meat is of more importance to the Chipewyans in Dene Village than to the Cree and metis because they spend less money on food (especially nutritionally good food) than the others. In many cases, drinking takes most of the money from wages. The welfare money, now given out under a system specially designed so that is must be spent on food or clothing, is often misspent. If the shopper is drunk, he will buy whatever looks good at the moment (usually the most expensive and least nutritional such as cookies, canned convenience foods and processed meat). Drunk or sober, there are few who have learnt how to shop for good food or to plan meals so as to get the most for their money. For example, canned stew will be purchased instead of the fresh vegetables and meat that could be better and cheaper in the long run. It is not unusual to see an Indian with a food voucher simply walk up and down the aisles and pick up whatever looks good. Few look at prices or choose the most necessary items first. Often they are forced to leave behind food that they selected because the cost was over the amount they were allowed. This type of shopper is usually the older person. Many of the younger people are learning how to select their food.

MEALS AND EATING HABITS:

It is very difficult to describe a typical meal but there are some common characteristics. The woman does the cooking. Breakfast is usually not considered too important and may be missed if the people are late or don't feel like eating. If there is any meat left from the day before, it may be eaten and leftovers such as fried potatoes, fried eggs, cereal (dry or porridge) may be made for breakfast. Tea is prepared. Men that work at the Manpower construction buildings carry lunches with them. These are usually three sandwiches of meat, seldom fruit or cookies. A soft drink or coffee is purchased at the plant. The meat in the sandwiches may be bologna, or any other packaged sandwich meat with mayonnaise or mustard on white bread. Hamburgers may be cooked the night before and eaten cold the next day. The children that stay for lunch at school take similar lunches although more often they prefer peanut butter or sandwich spread. They usually take two sandwiches. Men and children at home for lunch may have the same. More often, the woman will prepare a hot meal of stew or fried meat and potatoes. Supper is the main meal. Again, meat forms the base of the meal. Bread or bannock, potatoes and perhaps some vegetables are added to fill it out. Only a very few Cree women do any baking besides bannock. The others make packaged cakes. Consequently, there are seldom desserts. Cookies are eaten as snacks by the children and women. A can of fruit may be opened for dessert but most people fill up on the main meal and do not care for anything afterwards. The children buy a good deal of candy and soft drinks, and use much sugar in their tea. On the other hand, the older people tend to eat few sweets and do not care for jams, jellies or canned sweet fruit.

Generally, everyone eats well on the week days and drinks on the weekend. When drinking, the adults eat almost nothing and the children fend for themselves. Children are very good at getting money from their elders, however. Working men are generous on paydays, so the children have money to spend on chips, hamburgers and soft drinks. Again, this is a generalization. There are people who seldom drink to excess or who decide not to drink on a weekend. Some of the older people never drink or give it up for Lent, etc.

ACCOMMODATIONS AND FACILITIES:

Houses in Dene Village are of several types (all built with government money and all looking quite the same). They come in two, three and four bedroom sizes with one larger combined kitchen and living room. All have electricity. In the winter, the floors and walls are extremely cold even when the rest of the room is hot. The floors are bare and the walls are covered with posters and drawings. Until this year, all heating was done with coal. There is a large wood and coal burning cast iron cooking stove and a smaller round cast iron stove placed at opposite ends of the house. Piles of coal are dumped outside and the people carry buckets full into the houses and keep the two stoves burning all the time. Now, several houses have oil heaters. There was supposed to be running water but the pipes froze the first winter and now water is simply dipped out of the large water holder. A water truck delivers water regularly. There are no facilities for baths and no washing machines or indoor plumbing. The famous "honey bucket" is used. Liquid and solid garbage are thrown out the back or front door and later burnt. Cooking is done on the large wood and coal stove in the kitchen. These also have an oven but it is seldom used. In one of the two bedroom houses, the cooking stove was removed to make room for an oil heater and cooking is now done on a double hot plate. Most houses have a refrigerator. The kitchen is furnished with the stove, refrigerator, cupboards and counter and table. There is always a shortage of chairs and so boxes or homemade stools are used instead. Cooking implements include a cast iron frying pan, a few pots, a large stewing kettle and tea kettle and some mixing bowls. Sometimes, there is a roasting pan and often an electric kettle. Each plate seems to be one of a kind. Glasses are often from the beer parlours. Knives, forks and spoons are often similarly unmatched and the spoons are often bent out of shape through serving as bottle openers. There is always a large sharp carving knife and several steak knives. The living room is just a continuation of the kitchen. In the larger houses, there may be a sofa and some stuffed chairs. Several houses have televisions, almost all have radios and three have telephones. The bedrooms are furnished with a bed and dresser. The baby's crib is usually in the parents room and a desk or small side table may be there as well. The yards are quite dirty, being filled with old washing machines, bed springs, garbage and dogs. Only the Chief has a car and there are about three skidoos. Last year the band bought an old school bus but it is never used in the winter and seldom in the summer.

"The Flats" is an area across the tracks from the main townsite. It is the home of the Cree. There are no trees here but large stretches of tall bushes and coarse grass. The houses on the Flats are very different from those of Dene Village. They were built by the people living in them and out of their own money. Although the outsides of the houses do not look as good as those in Dene, they are in good repair and the yards are clean. Most of the dogs are kept chained. Since the houses are homemade, each has a unique shape. The buildings seem to fit in well because of age and lack of paint. The insides are kept much cleaner and although the furniture items are basically the same as those in Dene, they seem to be in better repair. Most have electricity but several still use kerosine lamps. There are several telephones. Heating is by coal in most houses but some have oil heaters. Again, there is no indoor plumbing or baths. Cooking is done on stoves similar to those used in Dene or on gas or electric stoves. Besides refrigerators, several houses have deep freezers. Large barrels inside the houses serve as water holders. Several of the houses on the Flats have sheds or garages. These serve as protection for trucks and skidoos. The majority of the households have at least one snowmobile and there are two trucks and two cars. All are kept in good condition.

Cree families from the Flats are now being moved into new houses in town. The reasons given are that these people are squatters, the land being owned mainly by C.N.R., and that the houses are not fit for habitation and do not fit into the plan for the "new Churchill". The new houses are large, two storey buildings with high ceilings and white walls. A minimum of furniture is provided with the building so most tend to look bare. There are numerous complaints that they are cold and drafty. One man complained that he had to sneak home at night so that his neighbours did not see him drunk and call him names. The same man had to go find his children on the Flats by the river every day after school where they went to play with their friends. However, the new houses do have hot and cold running water, indoor plumbing, electric lights, stoves, refrigerators, bath tubs and modern heating systems.

Cabins used for trapping out of town are built and organized for efficiency. Most are of logs and are built just into the trees off the railway line so that the trapper can go most of the way by train and his supplies may be dropped off at a prearranged time. Most trappers come back to town every two to four weeks either to stay for quite a while or just for a few days, leaving their dog teams behind. The cabins usually have only one room with small windows. Tar paper on the walls keeps the wind out. At a minimum, a cabin would include a bed, a table and some kind of cooking and heating stove. A common type of stove is made out of an empty oil drum. A hole is cut in it and the fuel is placed inside. A piece of stovepipe goes out through the roof. Coal oil stoves and especially lanterns are common. Cooking utensils usually consist of the basic cast iron frying pan and a few pots. Eating utensils are one or two plates, knives, forks and spoons. A hunting knife is most essential. The walls and cupboards are cord wood and most food is kept satisfactorily on the floors and along the walls. Meat is usually obtained from the bush. It can be stored outside in the winter when most of the trapping is done.

ACTIVITIES AND INTERRELATIONSHIPS:

As with other people, the lives of the Chipewyans and Cree tend to become regular. The week is broken into two parts, the work week and the week end. Monday to Friday, most of the men work and the children go to school. The school bus takes the Grades 1-8 children to town and the older children to camp. The lives of the women revolve around these activities.

Most of the Chipewyans work for Manpower constructing the new houses for town. Others are garbage and delivery men for private enterprises. Manpower workers get up at 6:30 each morning in order to catch the special bus and to be at work at 7:30. Others are similarly early risers. The women get up to make breakfast for the men. Children usually rise later and have their breakfast just in time to catch the school bus. The men work until 12:00 and stay for lunch at the plant. At 12:30 they begin working again, until 6:00 when the bus takes them home. Most of the other men with jobs have much shorter hours and get off work closer to 4:30 each day. The children stay for lunch at school and spend their noon hour in the Bay or S & M store or just walking around the town. The men want their supper as soon as they arrive home as there are different supper times. The women spend their days at home with the younger children, visiting others in Dene or going into town to shop and talk to other women in the store. There is much comic book reading and some of the women do beading and leatherwork. Most are bored and lonesome. The radio is one of the most important articles in the house and is left playing all day long. Several of the women hold short term jobs as secretaries or laundresses to the band or working in the cafes. These seldom last long. Evenings are usually spent at home. There are movies and hockey games in camp, bingoes and the beer parlours in town. These are attended minimally by the Chipewyans. One or two of the old men or younger men who are not working go hunting, and trapping. It seems that most of the people interested in these activities have to go to Tadoule though. A few of the working men also set a few traps but the catch is small and usually sold for drinking money.

The lives of the Cree are much the same except that more of the men hold jobs and these are usually with the C.N. railroad and delivery companies as well as with Manpower. Several go out trapping during the winter and work in town when jobs are plentiful in the summer. The Harbours Board, construction firms, hunters and researchers all need men in the summer. The Cree take better advantage of the few activities available and do less drinking. Many of the men play on hockey teams and whole families attend the games. The Cree women find most of their days occupied, although like the Chipewyan women, they too get bored.

Weekends for both tribes are mainly spent drinking. As I mentioned before, this starts Friday afternoon and ends up Sunday. Some go hunting or fishing instead, especially in the summer. The children go to hockey games, movies, the stores or stay around the house. They have money to do almost anything they like and so most tend to stay away from the parties, although the older ones often stay around to steal liqour or simply to see what is happening.

Drinking is the single largest problem in Churchill. The white people realize this and tend to look down on the Indians for their excessive drinking habits. It is interesting to note though, that the only alchoholics in Churchill are white. The Indians put on a bigger show and are wilder when drunk but they do not have any dependence on it. They can go hunting for weeks or to Tadoule Lake where they may not see any liqour and not be affected. The Indians themselves realize that drinking is a problem. Pay cheques are cashed Friday afternoon and the drinking starts immediately and lasts until the money runs out, usually Sunday. Any money left on Sunday goes to the bootlegger.

Some people shop for clothing and food first but most simply give money to the wife who is expected to buy food and her drinks out of it. Many people remain completely broke for the rest of the week and are forced to borrow money if they want to take the bus or go to a movie or to a hockey game. On the other hand, many families save money for the week. Money to be saved is usually hidden as people usually drink until they pass out and any money that they are carrying is very easily stolen. Putting money in the bank is extremely rare, limited to perhaps one person, but several people have loans from the bank and are prompt in paying them back. They usually arrange to have money deducted from their pay cheque each week until they are paid up. Loans are usually taken for the purchase of snowmobiles or trips to the large cities in the south (Brandon, Portage la Prairie, Winnipeg). There is much lending of money between individuals as well. Getting paid back is difficult and the lender must catch the borrower on his pay day or wait until the next week. Another practice that is common is the selling of personal articles and the reselling of things bought on welfare vouchers. Leather goods, beadwork, drawings and furs, etc., are sold in the hotel for prices much lower than the value to obtain money for drinking. Under a system of giving out money to the Indians that involves the use of vouchers, the Indians are allowed to buy watches and radios. These are quickly exchanged outside the store for cash.

The family is the single most important group in the Cree and Chipewyan society. The man is the head of the family unit. His duties encompass bringing home the money, game, protecting the family, repairing the house and possessions and a minimal amount of child care and disciplining. Many men are very concerned that their male children learn to hunt and trap. Fathers and grandfathers take their sons and grandsons out of school at times to take them hunting. One old Cree man takes his twelve to fifteen year old grandsons on the trapline with him and expresses the view that the drop-in centers should be abolished so that more children would spend time with the older people and out of town learning about the land. The woman's duties include keeping the house clean, cooking, mending, care of the children and most of their teaching and disciplining is outside of school. When small game is brought home, the women do the cleaning but if the game is large (eg. moose) the men will help. The children are usually quite wild but obey their parents well and are seldom hit if they do wrong. Instead they are teased and chided. The parents are not strict about school work although most realize the importance of school in these times. They are encouraged to stay in school but not forced to. Fighting with other children is considered an affair of the children involved and if there are no serious injuries, they are encouraged to fight their own battles. The children babysit and run errands for their parents and other adults. They often show disrespect for adults, especially the old and drunk, and steal money and beer from them. Strangely, the young adults of twenty or so show much consideration for their older parents and relatives.

As would be expected, there is much loyalty between the family members and much dependence on the backing up that the others provide. In both groups, but especially among the Chipewyans, there are many petty grievances and hard feelings based on jealousy, stealing, unfaithful spouses, cheating, etc., all accentuated by a tremendous amount of gossip. When drinking, fights are very common and numerous people (men and women) get beat up every week. Those are seldom fights of one person against another. The agrieved person usually gathers a backing of sympathizers and the group will fight together. If the other person knows something is going to happen, he will also gather a backing for protection. The obvious people to back you up are your brothers and sisters. If a young person is wronged, the older brothers or sisters will avenge them. Almost all of Dene Village seems to be related somehow though so that disagreements between relatives are fairly common. There is also loyalty on the tribal scale. A Chipewyan being beaten up by Cree or white men will cause the Chipewyans to group together, or vice versa. A strange type of loyalty that shows up now and then is that of a Manpower worker for his foreman or boss. This crosses racial boundaries. Strangely enough, it is a common practice to cheat a relative, sibling or spouse, or rob him while he is passed out. Another strange thing is that no actual loyalty is shown to the Chief because of his position. In an argument people may stand up for him because they like him as a person or because they are related to him, but never because he is their Chief or leader.

The Chipewyans seem to be a more closely knit group than the Cree although both have a strong sense of identity. Perhaps this is because the Cree are more spread out, some living in camp, some in town, some on the Flats, while virtually all the Chipewyans in Churchill live in Dene Village. The Chipewyans have a Chief and Councillors who are voted in to make decisions for them. The position of the Chief is a very different one. He is expected to make all the decisions for the tribe, obtain and allocate the money, etc., but without the full backing of the tribe and only on a part time basis. The money he gets for being Chief is not enough to live on as he must take another job. It is difficult to say just why he is as little respected. Co-operation between the Councillors and Chief is virtually nil so he is left on his own. Rumours of misuse of band funds, etc., further undermine his control over the people. On the other side, he must contend with the bureaucracy and red tape of the government that mean well but know how to work in only one way and cannot bend themselves to fit into a situation they cannot understand. The Chief is caught in the middle. He must put aside his long range plans of helping his people in order to explain four page forms for free medicine to old men who cannot even speak English but nevertheless received them in the mail.

The native people are in a state of transition right now. They are losing many of their old ways and picking up habits that they did not have before. Still, much of what they had and believed in was good and does not have to be lost.

Regardless of what interference other groups provide, it will be time in the end that solves the problems and smoothes the differences that exist. The Cree and Chipewyan are rightfully proud of many of the things that make them different. Instead of placing the emphasis on making the Indian "equal", to the white men, attempts should be made to help them retain as much as possible of their own culture. From experience in the past it should be realized that they would end up as perpetual problems and only second rate citizens. From the examples provided from moving people from the Flats into town it should be realized that a river and friendly neighbours can mean more than money and a big lonely house. Perhaps it is the white man that should be changing a little as well as the Indians.

APPENDIX 3

OBSERVATIONS MADE WHILE LIVING WITH A TRAPPER'S FAMILY IN SOUTH INDIAN LAKE

Kathy Lederman

February, 1974

A. MEALS

1.

Game	When Eaten	How Long
Fish	any time of day	all year
Moose	any time of day	all year
Spruce Hens	lunch (10 a.m.-10 p.m.)	fall
Ducks	lunch	all year
Geese	lunch	all year
Ptarmigan	lunch	winter
Beaver	any time of day	winter
Muskrat	any time of day	fall
Rabbit	any time of day	all year

The serving size for each meal was determined by the individual and by the amount of food available. The serving sizes varied with the seasons (smaller in summer, larger in winter), as well as with the activity going on.

2. Food Preparation

a) Cooking Facilities:

All residents use wood for cooking. The facilities consist of:

-a small tin wood stove with oven

-25 gallon heater

-an outside fire under the smoke rack

b) Cooking Utensils:

2 fry pans
2 roasters with lids
2 kettles
1 baking tin
1 small pot
1 large pot
2-5 lb. lard pails
2 middle-sized pots

A plastic basin was used for mixing bannock, pie crust, and bread. This was also used to wash dishes.

c) Storage:

-a log platform raised about 8 ft. from the ground with a ladder so that dogs cannot reach it.

-a tent on a platform any distance from 4 ft. to 10 ft. above the ground.

-those goods that cannot be kept outside are stored under beds in the fall and in wet weather.

d) Types of Meals:

Meats were served alone, with soup or gravy, with potatoes and other vegetables if there were any, and with bannock or bread. The fried meat was served usually with gravy and the boiled meat with soup.

As long as tin goods last, vegetables are served. Onions and potatoes are favourites. The meal usually finished with bannock with jam, brown sugar or corn syrup, if there was no pie or cookies.

Some other goods present in the house were oatmeal, brown sugar, white sugar, powdered milk, cocoa, coffee, tea, raisins, lard, flour, macaroni, rice, spaghetti, yeast, salt, pepper, cinnamon, baiing powder, instant potatoes, dry soups, tin soups, onions, beans, spork and campfire sausages.

i. Soup

-rice, dry soup, macaroni or spaghetti added to water that has been used to cook meat.

ii. Fish

This was one of the main dishes.

Ways cooked

-gutted and baked in oven

-floured and fried in lard (fillets)

-cut in pieces then boiled

-smoked and eaten

-smoked, then pounded, and eaten.

Types Eaten

-whitefish - usually baked or boiled

-jackfish - all ways, heads also boiled or baked

-red sucker - smoked, baked or boiled, heads boiled

-maria - fillets at times; livers and eggs floured, then fried or baked.

Storage

-almost always fresh if not smoked or frozen

-if frozen, fish are gutted and fins removed. Heads are left on.

  - -gutted with heads and fins removed
  - -fillets

Serving size was at least half a fish per person, ranging up to two fish per person.

iii. Moose

Ways Cooked

-fried in tallow or lard (steak or ground)

-roasted in oven

-boiled

-smoked then eaten with tallow or lard; pounded then eaten with tallow or lard; boiled then used for soup; stew pounded then boiled.

-bones baked for marrow

-all fat collected and some boiled to make tallow; remainder smoked and kept for later use.

-almost all parts of the moose are used.

Storage

-frozen in large pieces

-smoked and stored indefinitely

-in summer eaten fresh for a few days, then smoked.

Serving size was always large.

iv. Spruce Hens, Ducks, Geese, & Ptarmigan

Ways Cooked

-roasted and stuffed

-boiled

-roasted over fire on stick

Storage

-gutted, feathers burned off, washed in salt water and frozen

-sometimes smoked slightly

-if not frozen, usually eaten fresh.

Serving size was about 1/2 a duck per person.

The hearts and kidneys were always cooked and eaten.

v. Beaver

Ways Cooked

-boiled

-smoked a little, then boiled

Storage

-fresh frozen after gutting

-smoked and frozen

Serving size was large.

vi. Muskrat

Ways Cooked

-boiled

-children cut off tail and put it right into the fire

Storage

-eaten fresh

vii. Rabbit

Ways Cooked

-boiled as stew or soup

Storage

-eaten fresh

-frozen

Servings were as much as wanted until it was eaten.

viii. Mooseberries

-used as they are with sugar or milk

-jam (with bannock, bread or pounded moose meat)

-pie

-wine

These berries are picked from mid-August until first snowfall. They try to pick enough to last through the winter.

ix. Mint

-picked and used fresh or dried as tea

-dried and used as medicine

x. Raspberries, Blueberries, Huckleberries

-picked in season and eaten fresh or in pies

xi. Indian Tea, Labrador Tea

-picked fresh and boiled

-picked and dried for later use

-used as medicine

3. Eating Facilities

-family usually eats in cooking area

-we had a long table along one wall (8' by 12')

-there were enough plates, forks, spoons and mugs for about 6 people.

B. LIFE STYLES

1. Daily Routine

	Day 1	Day 2	Day 3
6:00-8:00	rise	rise	rise
6:30-8:30	breakfast, get water	breakfast, get water	breakfast, get water
9:00-11:00	check trapline	check net	do washing
11:00-12:00	feed dogs, eat	feed dogs, eat	feed dogs, eat
12:00-3:30	clean house, sew, make bannock, bake	tidy house, skin animals, sew, eat	tidy house, make bannock, sew, wash floors
4:00-4:30	get water, wood	get water, wood	get water, wood
4:30-7:00	sew, prepare hides for drying	prepare hides, fill lamps, sew	sew
7:00-9:00	eat, listen to radio, prepare snares	eat, listen to radio prepare snacks	eat, listen to radio, skin and flesh beaver
9:00-10:00	bed	bed	bed

Day 3 refers to activities carried out while the men are away at their traplines. When the men were home, they gathered wood, or worked on their skidoo. Sometimes they would leave at 6 a.m. for the day, returning between 5-7 p.m. The men would check the net while at home and help around the house.

The inside work was usually done on windy, snowy or cold days. Stretching out a moose hide takes the whole day with almost constant attention required.

2. Family Characteristics

Father	age - middle 50's, very kind, concerned for others and has a very good sense of humour.
Mother	age - late 40's, sometimes very entertaining, other times stubborn and difficult. Artistic and can make slippers, mitts, jackets and muckluks in a day.
Son	age 20, amiable, good sense of humour, determined, kind and stubborn.
Daughter	age 18, mentally retarded (age 4-5), appears happy.
Son	age 6 or 7, stubborn, temper prone, spoiled child. Can be pleasant, if he wishes, but is usually unco-operative.

3. Usual Activities

Mother	sewing, fleshing beavers, baking and candy making, floor washing, does most of the skinning and drying of hides.

Father	gather wood, construct smoke racks, set net, gut beaver, make string snowshoes, scrapers for moose hide, work on skidoo and boat engines. Because of children, the men were the ones on longer traplines and trips. Women go if there are no children.
Older Son	worked along with his father, would occasionally take over cooking and baking of bannock.
Daughter	washed clothes, did dishes, swept floor and brought in wood.
Young Son	did nothing when his mother was present but would do as asked otherwise.

4. Discipline

Discipline is administered by either parent or by an older child in charge. In this particular household, the father had the final word unless it concerned the 6 year old, in which case the mother intervened to protect him. When the mother was absent, he was obedient, but he became defiant as soon as she appeared. Generally, the father's word was law.

5. Social Relationships

Guests were always offered tea and food. If members of the family group had been away, they would tell their stories and news while eating. The meal just after dark was usually a family gathering; most of the talking and story telling was done over tea or coffee during the evening. The only difference in routine when guests joined the family group was that there were more people to feed. Sometimes the men did the cooking and the visiting group did their own laundry and helped the family gather wood and look after the net. The wife would speak her mind to them just as she would to her own family.

Sharing appears to be an important factor in this group. You share whatever you have with a visitor. He will repay you at some time in the future by providing something you need. For example, when the family was out of flour, a trapper sent 25 lbs. for them to use. This was repaid later.

Many of the older people have a particular friend whom they call "partner". If they are at a party, out trapping or anywhere together, each partner watches over the other. It is considered important not to leave your partner.

6. Values Stressed by Parents

- -honesty
- -work for what you get
- -help others (sharing)
- -politeness

Cree is spoken if English is not understood. English is spoken to those who do not understand Cree. Cree is always spoken between themselves.

7. Medicines

Many local residents believe in the home remedies used for many years before doctors and nurses came to northern Manitoba. Seneca root, mint tea, Indian tea and mossberry juice are used for various ailments. Many of the old folk refuse to visit a doctor. They rely on their own native healer to supply the traditional medicines. In many cases, these are more effective than modern medicine.

APPENDIX 4

NUTRITIONAL DATA FROM INTERVIEWS CONDUCTED AT CROSS LAKE AND NELSON HOUSE

Social and Economic Impact Study
Team

March, 1974

USE OF BUSH FOOD AT NELSON HOUSE 1973/74

A. Meats & Fish

The residents at Nelson House do not use land foods extensively. In fact, 20% of the people interviewed stated that they made absolutely no use of country food. Averaged for the entire population, the quantity of land food meals at Nelson House during 1973/74 was equivalent to:

5 meals of fish per household per month
2 meals of waterfowl per household per month
1 meal of moose per household per month
1 meal of muskrat per household per month
1 meal of beaver per household per month
0.5 meals of lynx per household per month
0.5 meals of rabbit per household per month
11 meals of land food per household per month

The frequency of country food meals varies from season to season (see Table 1). The average number of meals per week for each season was:

4.42 meals per week during summer months

2.65 meals per week during spring months

2.4 meals per week during winter months

1.9 meals per week during fall months

Fish and waterfowl were the most frequently used land foods and both were most easily obtained in the summer. Moose also was used most often in the summer. The availability of muskrat and beaver carcasses during trapping season slightly increased the bush food consumed during the spring. Similarly, the carcasses from winter trapping were responsible for a small increase in land food consumed during the winter months. Land food was used least often in the fall and was limited to the use of fish and some waterfowl.

Table 2, p. 130, shows that fishing contributes 47% of bush food meals, hunting 31% and trapping 22%. Thus, although few Nelson House residents are commercial fishermen, domestic fishing is a year round activity which provides the major source of land food.

B. Locally Grown Fruits and Vegetables

1. Fruits

TABLE 1

SEASONAL CONSUMPTION OF BUSH FOODS - NELSON HOUSE

Average number of meals per week

FOOD ITEM	SPRING	SUMMER	FALL	WINTER	ANNUAL MEALS/WK.	ANNUAL MEALS/MO.
Fish	1.0	2.1	1.5	.8	1.35	5
Waterfowl	.6	1.3	.2	.04	.53	2
Muskrat	.8	nil	.1	.2	.27	1
Moose	.05	1.0	nil	nil	.26	1
Beaver	.14	nil	.05	.6	.19	1
Lynx	.05	nil	.06	.5	.15	.5
Rabbit	.02	.02	.02	.3	.09	.5
Grouse, Ptarmigan	nil	nil	nil	.02	nil	nil
ALL SPECIES	2.65	4.42	1.9	2.4	2.8	11

TABLE 2

SOURCE OF BUSH FOOD CONSUMED IN EACH SEASON - NELSON HOUSE

Average number of meals per week

FOOD SOURCE	SPRING	SUMMER	FALL	WINTER	ANNUAL	%
Fishing	1	2.1	1.5	.8	1.35	47
Hunting	.67	2.3	.22	.36	.88	31
Trapping	.98	nil	.21	1.3	.62	22
ALL ACTIVITIES	2.65	4.4	1.93	2.46	2.85	100%

Whenever available blueberries, (84% of respondents), raspberries (78%), and mossberries or cranberries (52%), and to a lesser extent strawberries (15%) and saskatoons (5%) are gathered for food. The berry season is about eight weeks long, ending in late August. The harvest varies greatly depending on rainfall. Roughly, 36% of the Nelson House people interviewed reported canning and/or bottling to preserve food. Berries (when abundant) were the most common item. The supply of preserves generally lasted until January. Thus, about 80% use berries for 8 weeks in summer and about 36% use berries from late June until January. The amount varies directly with the seasonal production. In addition, some berries, particularly cranberries were stated to last all winter or as long as supply lasts (usually August to December) even if not canned.

2. Vegetables

About half of the people interviewed use locally grown vegetables (primarily potatoes). It is difficult to determine exactly how many people cultivated gardens and how many used vegetables given to them by friends and relatives. At least 5% were elderly persons who stated they depended on gifts from daughters, etc. The gardeners appear to be the men in the family.

(Not once was a sister, a mother, or a female respondent referred to as a gardener.) Home grown potatoes were used by 49% of respondents, carrots 44%, turnips 41%, onions 4%, corn and peas 2%. Few homes make use of home grown vegetables during the winter (potatoes by 7% of respondents, carrots 5%, turnips 5%) although one respondent said vegetables, if kept from freezing, will last until January. No means of preserving vegetables other than storage is attempted. Community planning without delineated property lines and no fences makes maintenance of large gardens difficult. The large family size, relatively small gardens and lack of adequate storage space probably account for the minimal use of home grown vegetables during the winter months.

USE OF BUSH FOOD AT CROSS LAKE 1973/74

A. Meats & Fish

Bush food comprised a significant portion of the diet of 97% of the households at Cross Lake from spring 1973 to winter 1974. The number of meals of bush food consumed at Cross Lake during 1973/74 was equivalent to:

3 meals of fish per household per week

1 meal of moose per household per week

1 meal of waterfowl per household per week
0.5 meals of muskrat per household per week
0.5 meals of beaver per household per week
0.0 negligible amounts of lynx and rabbit
_6_ meals of bush food per household per week

Meals of bush food are eaten year round but there are slightly more eaten in the spring and fall. (See Table 3, p. 134) The increase during spring and fall is due to the availability of carcasses from traplines as well as more waterfowl. Fish and moose are available all year and account for 66% of the bush food consumed. Only a very small proportion of the meals consisted of lynx and rabbit. This is probably due to the cyclic minimum in population which coincides with the time of sampling.

There are three activities associated with gathering bush food - trapping, hunting and fishing. Table 4 (p. 134) shows that fishing and hunting contribute 48% and 36% of the bush food meals, respectively, while trapping contributes the remaining 16%. Therefore, a decline in the number of trappers would not likely cause an alarming drop in the amount of land meats consumed in the community. Moose hunting is often done by means of aircraft which ensures a high success rate. Waterfowl, at present

TABLE 3

SEASONAL CONSUMPTION OF BUSH FOODS - CROSS LAKE

Average number of meals per week

FOOD ITEM	SPRING	SUMMER	FALL	WINTER	ANNUAL AVERAGE
Fish	2.7	3.3	2.7	2.8	3 (50%)
Moose	0.4	0.9	1.7	1.4	1 (17%)
Waterfowl	2.2	0.6	1.6	0.0	1 (17%)
Muskrat	1.8	0.0	0.0	0.0	0.5 (8%)
Beaver	0.9	0.0	0.7	0.1	0.5 (8%)
Rabbit	0.0	0.0	0.2	0.1	0.07 (1%)
Lynx	0.0	0.0	0.1	0.1	0.05 (1%)
ALL SPECIES	8.0	4.8	7.0	4.5	6.1 (102%)

TABLE 4

SOURCE OF BUSH FOOD CONSUMED IN EACH SEASON - CROSS LAKE

Average number of meals per week

FOOD SOURCE	SPRING	SUMMER	FALL	WINTER	ANNUAL AVERAGE
Fishing	2.7	3.3	2.7	2.8	2.9 (48%)
Hunting	2.6	1.5	3.3	1.4	2.2 (36%)
Trapping	2.7	0.0	1.0	0.3	1.0 (16%)
ALL SOURCES	8.0	4.8	7.0	4.5	6.1 (100%)

are abundant in season and fish is easily obtainable near the community. Since little effort is required to take moose and waterfowl and since many regard hunting as recreation, the inclination to hunt is not likely to decline. Until the population of game species diminishes sufficiently to make hunting difficult, recreational hunting will be common. Fishing contributed a substantial number of meals to the majority of residents during 1973/74. This indicates that domestic fishing is carried on even though many of the residents have entered the wage economy and no longer fish commercially (see Cross Lake Community Profile, Social and Economic Impact Study, Lake Winnipeg, Churchill and Nelson River Study). Thus, it appears that fish, moose and waterfowl will continue to be a part of the diet of Cross Lake residents so long as game and fish are readily available.

B. Locally Grown Fruits and Vegetables

Four or five varieties of locally grown berries are used in the diet of about 80% of the residents of Cross Lake. The most popular varieties are raspberries, cranberries, saskatoons, goosehead berries (big yellow berries found in muskeg) and strawberries, respectively. Vegetable gardens are essentially non-existent. Potato growing (by less than 10% of the population) appears to be the only gardening undertaken. About 12% of those interviewed said that although they used to garden, they no longer do so. There were two reasons given for discontinuing gardening:

1. crowded conditions (old houses were left standing after new homes were built), and

2. damage caused by children.

Local fruits and vegetables last only a few weeks for the majority of families. About 65% of the people interviewed have done some preserving of food for future use. The most frequently used methods were freezing, canning and/or bottling, smoking and drying, respectively. Only 15% of those interviewed said local berries and vegetables lasted all winter. The insufficient supply of preserves for the winter is probably due more to the quick depletion of harvest areas and gardens, rather than ignorance of preserving techniques.

C. Methods of Cooking Meat & Fish

Meat and fish are boiled, fried or roasted. Boiling is the most popular, probably because soup is a favourite. Frying and roasting are only slightly less popular. Roasting in some homes can be done only on a campfire.

SHOPPING PATTERNS AT NELSON HOUSE 1973/74

A. Local Shopping

Fifty percent (19 persons) of those interviewed were satisfied with the foods available at the Nelson House Bay store. The remaining fifty percent mentioned concerns about four commodities, namely: meats, land meats and fish, vegetables, and bread.

Thirty-six percent of the respondents (14 persons) wanted a greater variety of meat to be available (whole chickens instead of parts, more steaks, and more roasts were the specific ones mentioned). Equally as frequent was the concern for meat quality. It was felt that meat "spoils quickly," "doesn't keep" and, in the case of one respondent, that it is frozen, thawed and refrozen before sale.

Eighteen percent (7 persons) thought locally caught land meats and fish (ducks, waterfowl, frozen sturgeon, lake trout, local meats) should be traded for groceries and resold to others at the Bay store.

Thirteen percent (5 persons) wanted a greater variety of vegetables and better quality. One person asked why locally grown vegetables could not be sold at the store.

The fourth commodity mentioned was bread. Five percent (2 persons) thought the store should stock more.

B. Outside Shopping

Thirteen percent (5 persons) said they do not shop outside the community at all. Many of them believed there were advantages to grocery shopping elsewhere (cheaper) but were prevented by some reason such as being physically unable or not having enough pension money left over at the month end. One was a 26 year old who didn't shop outside. The majority of shopping that was done outside Nelson House was for food, and presumably was done in Thompson since no other locality was mentioned. Thirty-four percent (13 persons) stated that they did some clothing shopping in Thompson but the general concensus seemed to be that clothing there was not cheaper. Fifteen percent (6 persons) acknowledged that some household appliances were purchased in Thompson but again the feeling seemed to be that there was no advantage to doing so. Other items bought in Thompson were records, magazines, and "personal items."

Of the 84% of respondents who do shop in Thompson (32 persons), 78% (25 persons) mentioned cheaper prices as one reason, 78% (25 persons) gave greater variety as one reason, 50% (16 persons) gave better quality as one reason, 43% (14 persons) stated goods not available locally as an advantage and 9% (3 persons) mentioned enjoyment of Thompson as a reason. "I mostly enjoy vegetable shopping," "window shopping," "enjoy shopping in Thompson." The frequency of shopping trips seems to be once a month, or sometimes twice a month.

It is interesting to note that the elderly people, almost without exception, wished to buy food in Thompson. "Unable to go but would like to," "can't speak English but it is a good idea," "if I have extra pension money at end of month, I get someone to get things for me." The most common deterrent mentioned was lack of pension money or ration money at the end of the month. They feel that the expense of the trip offsets any saving on groceries.

SHOPPING PATTERNS AT CROSS LAKE 1973/74

A. Local Shopping

The only retail outlet at Cross Lake is the Bay store.

Thirty-eight percent (12 respondents) of those interviewed were satisfied with the items that were available at the Cross Lake Bay store. Forty-four percent (14 respondents) of the Cross Lake residents expressed concern for a lack of traditional food items.* The items mentioned were:

1. 3 lb., 5 lb., or 20 lb. pails of lard (by 44% or o4 respondents),
2. fresh fish (by 16% or 5 respondents),
3. wild meats (by 7% or 2 respondents), and
4. bulk food such as kegs of salted meats, jams, beans, quarters of beef and slabs of bacon (by 16% or 5 respondents).

---

*The age structure of the Cross Lake sample was such that 68% of respondents were over 45 years. Only 30% of the population is in that age class.

Thirteen percent expressed typically modern concerns about food items stocked. Their concerns were specifically:

1. there should be a greater variety and quality of meats (13% or 4 respondents),

2. there should be more fresh fruit and vegetables (9% or 3 respondents),

3. there should be more and fresher dairy products (3% or 1 respondent),

4. there should be dog food available in large bags (3% or 1 respondent),

5. there should be more new products of all kinds (3% or 1 respondent), and

6. there should be cheaper meat available (3% or 1 respondent).

Six percent of those interviewed expressed both traditional and modern commodities were lacking. Their concerns were similar to those stated above for both types of items.

B. Outside Shopping

Fifty-six percent (18 respondents) of those interviewed said they do some shopping outside the community. Fifteen of the eighteen shopped outside for groceries and three shopped for clothing. The reasons for shopping outside Cross Lake were:

1. goods were cheaper (13 respondents),
2. goods were of better quality (3 respondents),
3. there was greater variety to choose from (3 respondents), and
4. some goods were not available locally (1 respondent).

The specific out-of-town location where residents shopped was not asked. However, general questions were asked on travel to and from the community. Sixty-two percent of the people indicated they visited outside communities at least once a year. The outside communities visited were:

1. Thompson (by 50% or 16 people),
2. Jenpeg (by 28% or 9 people),
3. Wabowden (by 25% or 8 people),
4. Norway House (by 16% or 5 people),
5. Oxford House (by 16% or 5 people),
6. Winnipeg (by 16% or 5 people), and
7. Nelson House (by 8% or 3 people) plus other Manitoba communities.

The most common reasons given for these visits were to visit with friends and relatives and to attend business or church meetings.

Thus, although trips primarily for shopping were not common, if shopping facilities were better than those within the community, some shopping was undoubtedly done during these trips. The most likely communities where this would occur are Thompson, Jenpeg, Winnipeg, and possibly Norway House.

APPENDIX 8 - VOL. 3 - D

SIMULATION OF ALTERNATIVES FOR THE SOUTH INDIAN LAKE COMMERCIAL FISHERY

SIMULATION OF ALTERNATIVES FOR THE SOUTH INDIAN LAKE COMMERCIAL FISHERY

by

J. D. COLLINSON, et al
The Social and Economic Impact Study Team
Planning Branch
Manitoba Department of Mines, Resources and Environmental Management
Winnipeg, Manitoba
March, 1974

for

THE LAKE WINNIPEG, CHURCHILL AND NELSON RIVERS STUDY BOARD

SPECIAL NOTE

THE CONCLUSIONS AND RECOMMENDATIONS CONTAINED IN THIS APPENDIX ARE THOSE OF THE AUTHOR(S) AND ARE NOT NECESSARILY THE SAME AS THE CONCLUSIONS AND RECOMMENDATIONS OF THE LAKE WINNIPEG, CHURCHILL AND NELSON RIVERS STUDY BOARD AS EXPRESSED IN THE SUMMARY REPORT AND THE TECHNICAL REPORT.

PREFACE

This study was initiated by the Department of Mines, Resources and Environmental Management at the request of the Lake Winnipeg, Churchill and Nelson Rivers Study Board. The request for such a study was prompted by a recommendation contained in the Social & Economic Impact of the Nelson River Hydro Development (With Emphasis on South Indian Lake), Department of Northern Affairs, Preliminary Report, June 1973. The report indicated that the abundance and distribution of fish, as well as fish handling and harvesting activities, would be affected somewhat by the diversion of the Churchill River. Therefore, a study which would provide an estimate of such effects was required. This took the form of the following simulation model which will be used by the socio-economic study group of the Lake Winnipeg and Nelson Rivers Study Board to assess the potential income and employment impacts of the diversion project on the commercial fishery at South Indian Lake.

The model can be used for two additional purposes:

1) It can be used to find a means of improving the project position of the South Indian Lake Fishermen's Co-operative and the income position of the fishermen of South Indian Lake.
2) It can become a management tool for co-ordinating and evaluating various fisheries programs in Manitoba.

Use of the model to formulate and test the effects of fisheries programs will naturally lead to a greater understanding among organizations or agencies involved of the critical linkages between the various components of the industry. Traditionally, fisheries management has been viewed as a biological problem. However, the fishery in common with other resource industries, requires knowledge of production, marketing and finance, as well as biology. This model has been built to show such relationships. The model integrates the relationships between fish populations, fish harvesting methods, fish transportation, fish handling and processing methods and the income of the fishermen and the profitability of fish handling and processing facilities. Since the data used in the simulation model is preliminary, attention should be focused more on the interrelationships between the numbers than on the numbers themselves.

The preliminary data suggests areas for more detailed investigation and provides a base and a framework for these to be carried out by the agencies most directly involved.

J. D. Collinson,
Assistant Deputy Minister,
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Department of Mines, Resources
and Environmental Management.

SUMMARY OF FINDINGS

Commercial fishing began on South Indian Lake in 1942 with the first fresh fish being taken out by air in 1943. Trapping was the sole source of cash income prior to that.

Employment in the fishery over the years has gradually shifted from fish companies and outside fishermen hiring local residents to fish for them to a completely local operation by 1970 with the formation of the South Indian Lake Fishermen's Co-operative Limited, which represented the single most important economic activity for the community. In 1972-73, the commercial fishery represented about $235 thousand net income or 43 percent of the total community income. This total includes income-in-kind (food, clothing, fuel) from resources as well as all government transfer payments.

During 1972-73, however, the Co-operative has fallen into financial difficulties directly linked to the new facilities at Leaf Rapids, Loon Narrows station and the purchase of freight boats. The debt load is approximately $1 million and the chances of the Co-operative being able to pay off any of this appear remote.

With this immediate problem overshadowing the fishery, it is virtually impossible to assess the impact of Manitoba Hydro development, on the fishery. Biological data should be available through the Nelson River Study Board in 1974, but without an overall "model" of the fishery this information will be of limited value—especially to the local fishermen.

Therefore, even regardless of the diversion, a "simulation model" of the entire fishery from lake to market (Winnipeg) is essential if decisions which must be made can be made with some knowledge and understanding of the effects on the entire fishery; such a model could show, for example, the effect on the net income of fishermen due to the distribution of any surplus from fish Co-operative operations.

It could be used to simulate the effects of adding lakes not presently fished; of various alternative transportation systems; of various processing possibilities; of biological changes in the lake, etc.

In addition to being useful in the case of South Indian Lake, it could be applied to other fisheries such as Ilford, Island Lake, etc., simply through modification of data inputs.[1]

The results of the analyses conducted are presented in Table A. To facilitate study of the table, a complete listing of information is provided for 1972-73 operations and only those items which differ from those for 1972-73 operations are listed for each alternative analyzed.

The results of the 1972-73 simulation of the fishery operations approximate actual conditions quite closely. Features of operations in that year are: (1) the low average net income per fisherman in both seasons ($1,152 in the summer season and $681 in the winter season), (2) the high levels of fish cullage at lakeside and Leaf Rapids (an estimated 593 thousand pounds including lakeside winter and summer and

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[1] The introductory comments are taken from J.D. Collinson et. al. "Social and Economic Impact of the Nelson River Hydro Development," Preliminary Report (Winnipeg: Manitoba Department of Northern Affairs, 1973), p. 77.

TABLE A

SUMMARY OF 1972-73 AND ALTERNATE SIMULATIONS FOR THE SOUTH INDIAN LAKE FISHERY

Submodel	Simulation of 1972-73 Operations	Leaf Rapids Plant Alternatives: Whitefish					Volume Alternatives				Transportation Alternatives		Fish Harvest Alternatives		Cullage Reduced	Rough Fish Harvested
		2¢	[illegible]	[illegible]	[illegible]	No Leaf Rapids Plant	[illegible]	[illegible]	[illegible]	[illegible]	Plane Lakeside to Leaf Rapids (winter only)	Truck Leaf Rapids to Winnipeg	All 1 Man Yawls	Summer 2 Man Yawls Winter Bombardier Snowmobile		
							........Pounds........									
BIOLOGICAL RELATIONSHIPS																
Quota (lb.)	1,200,000						[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]		[illegible]
Catch (lb.)	1,120,212						590,626	[illegible]	[illegible]	[illegible]			1,171,5[illegible]	[illegible]		[illegible]
FISH HARVEST—SUMMER																
1 Man Skiffs (no.)	24						16	16	52	[illegible]			[illegible]			
2 Man Skiffs (no.)	27						18	18	[illegible]	[illegible]			[illegible]	[illegible]		
Fishermen (no.)	78						52	52	104	[illegible]			[illegible]	[illegible]		
Average Net Income per Fisherman	$1,152.[illegible]												1,334	[illegible]		[illegible]
Net Income Under $1,000 (no.)	39						26	26	52	[illegible]			24			[illegible]
Net Income $1,000–$1,500 (no.)	18						12	12	24				[illegible]			24
Net Income > $1,500 (no.)	21						14	14	28	[illegible]			24			24
Lakeside Cullage (lbs.)	325,824						217,216	217,216	434,432	[illegible]			[illegible]	[illegible]	162,912	[illegible]
Average Price Paid to Fishermen (¢/lb.)	16															[illegible]
Species: Whitefish (%)	85.7															[illegible]
Pickerel (%)	11.9															[illegible]
Other (%)	2.4															[illegible]
Rough Fish (%)	0.0															[illegible]
FISH HARVEST WINTER																
Dog Team (no.)	4						[illegible]	4	[illegible]	[illegible]						
Bombardier—Snowmobile (no.)	12						[illegible]	[illegible]	[illegible]	24				[illegible]		
Bombardier (no.)	4						[illegible]	[illegible]	[illegible]	[illegible]						
Fishermen (no.)	36						[illegible]	[illegible]	[illegible]	72				42		
Average Net Income per Fisherman	$661.00													[illegible]		810
Net Income Under $600 (no.)	12						[illegible]	[illegible]	[illegible]	24				[illegible]		8
Net Income > $600 (no.)	24						[illegible]	18	[illegible]	48				[illegible]		28
Lakeside Cullage (lbs.)	154,266						[illegible]	[illegible]	192,6[illegible]	[illegible]				[illegible]	[illegible]	220,3[illegible]
Average Price Paid to Fishermen (¢/lb.)	18															[illegible]
Species: Whitefish (%)	85.7															[illegible]
Pickerel (%)	11.9															[illegible]
Other (%)	2.4															[illegible]
Rough Fish (%)	0.0															[illegible]
PROCESSING AND HANDLING																
Total Co-op Assets ($)	851,398.00															
Lakeside Facilities ($)	97,584.00															
Leaf Rapids Plant	754,414															
Total Cost (¢/lb. sold): Summer	48.6	47.9	[illegible]	46.1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Winter	51.4	50.1	48.8	47.5	[illegible]	51.9	[illegible]	[illegible]	[illegible]	52.4	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]
Plant Cullage (lb.)	115,232						[illegible]	[illegible]	149,776	[illegible]			119,841	[illegible]	[illegible]	[illegible]
Co-op Employees (no.)	18					11	[illegible]	[illegible]	21	[illegible]			19	[illegible]	19	[illegible]
Wages and Salaries ($)	94,200.00					[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]
Co-op Net Income ($)	-113,489.[illegible]	[illegible]	-97,122.[illegible]	[illegible]	[illegible]	[illegible]	-139,274.[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Plant Net Income Excluding Cullage, Purchase Versus Selling ($)	[illegible]	-65,818.[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-44,[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]
Price Losses and Transport Costs																
TRANSPORTATION (cost/lb.)																
Boat—Lakeside to Leaf Rapids (¢/lb.)	[illegible]															
Plane—Lakeside to Leaf Rapids (winter only)											[illegible]					
Bombardier—Lakeside to Leaf Rapids (¢/lb.)	[illegible]															
Truck—Leaf Rapids to Lynn Lake (¢/lb.)	[illegible]															
Rail—Lynn Lake to Winnipeg (¢/lb.)	4.5															
Truck—Leaf Rapids to Winnipeg												[illegible]				
LABOUR BALANCE																
Number Fishing (Total Both Season)	114						[illegible]	[illegible]	[illegible]				[illegible]	[illegible]		
Co-op Employment: Seasonal	[illegible]					[illegible]	12	[illegible]	[illegible]				[illegible]	[illegible]	[illegible]	
Full Time	[illegible]					[illegible]	[illegible]	[illegible]	[illegible]				[illegible]	[illegible]	[illegible]	
Hydro Employment, December 1975 (no.)*	149															
Population of South Indian Lake 1971 (age 15–65)	[illegible]															

---

*Number of individuals living north of the 5[illegible] parallel employed at South Bay, Missi Falls, Kettle[illegible] and in the Forebay area.

plant cullage, and (3) the large losses incurred by the Co-operative (a loss of $113 thousand for the total Co-operative and a Leaf Rapids plant operation loss of $76 thousand).

Some findings illustrating potential uses of the model and areas for further intensive analysis include:

1. From review of the results of the write-off alternatives, it is seen that each successive 25 percent write-off (forgiveness) reduces total Co-operative and Leaf Rapids plant losses by approximately $10 thousand and reduces total Co-operative costs per pound sold by .9 cents per pound in summer and 1.3 cents per pound in winter.

2. Elimination of the Leaf Rapids plant facility results in net income position of the total co-operative rising from the negative level (loss) of minus $113 thousand to a profit of $41 thousand.

3. The volume of catch alternatives illustrate that losses decline as volume increases and that the Leaf Rapids plant operation reaches the breakeven point at approximately 2 million pounds.

4. The transportation alternatives indicate that the total fisherman and Co-operative income position: (a) deteriorates some $23 thousand when air transport from lakeside to Leaf Rapids at an assumed rate of 8.5 cents per pound is used, and (b) improves by some $30 thousand when fish is transported directly from Leaf Rapids to Transcona at a rate of 3.5 cents per pound by truck.

5. The fish harvesting alternatives analyzed illustrate that, when operated under 1972-73 enterprise conditions, all one-man skiff versus all 2 man operations generate a higher net income per fisherman while reducing the total number fishing given the 1972-73 quotas. When bombardier-snowmobile operations are used exclusively in the winter fishery, the average net income per fisherman falls $85, although the number fishing rises from 36 to 42 relative to the previous combination of dog team/bombardier and bombardier-skidoo.

6. The reduction of cullage under current operating conditions (the co-operative absorbs cullage losses due to deterioration between lakeside and delivery to Transcona) improves the income position of the Co-operative. An assumed halving of cullage losses decreases total Co-operative losses by some $17 thousand.

7. The harvesting of rough fish based on a price of 3 cents per pound paid to fishermen improves income of fishermen by an average of $129 in the winter season and $125 in the summer season. However, the uneconomic nature of conditions regarding rough fish harvest assumed in the analyses results in increased losses of $39 thousand to the total Co-operative.

8. The number of positions range from a high of 3 permanent and 18 seasonal with a 2 million pound volume to a low of 3 permanent and 12 seasonal with a .6 million pound volume.

The results of the study were restricted by: (1) the short-term nature of the study (6 months), (2) the complexity of the problem, (3) the previous absence of a planning framework for the South Indian Lake Fishery, and (4) the restrictive assumptions required due to incompleteness of data.

ACKNOWLEDGEMENTS

The study was conducted under contract between the Manitoba Department of Mines, Resources and Environmental Management and the Natural Resource Institute, University of Manitoba. The study team was greatly assisted in the collection and interpretation of data and format of the model by members of the Nelson River Hydro Development Social and Economic Impact Study Team, Freshwater Fisheries Institute Staff (including Ken Weagle, Helen Ayles, Joe Stern, and Dan Topolinski), Department of Co-operative Development Staff (Lenore Good, Victor Hryshko) Gordon Demery (Manager, South Indian Lake Fishermen's Co-operative) and representatives of other Federal and Provincial Agencies who attended meetings and three study discussion sessions.

Dr. Sol Sinclair, Department of Agricultural Economics, and Dr. Paul Nickel, Director, Natural Resource Institute, University of Manitoba, provided helpful comments on an earlier draft and Lorna McKerness, Natural Resource Institute, and Gordon Gislason, assisted with data collection and analysis. The Department of Agricultural Economics assisted in the study by providing project accounting, editing and typing services.

The authors wish to express gratitude for the assistance noted above, but assume full responsibility for errors or omissions in the report.

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INTRODUCTION

Background and Study Context

Fishing is a significant source of income and employment for a large number of Manitobans, including native northerners and processors in Winnipeg. The industry has characteristically been one where net income of fishermen is low.[2] The reasons for the low level of net income (returns) can be enumerated:

1. Lakes for commercial fishing are spread over a large geographic area and transportation problems exist in both the assembly of fish at fishing stations and in shipping for processing in Winnipeg.

2. The handling and processing of fish is loosely structured and problems of facility utilization and management levels are present. More stringent but necessary fish quality standards require greater capital investment in facilities.

3. A multiplicity of agencies relates to various components of the overall fishery. Fishermen are concerned about income and life styles. The Freshwater Fish Marketing Corporation and the Co-operative are concerned with achieving a net return to fishermen. Manitoba Hydro is concerned with completing the Churchill diversion. Indian Affairs, Health and Social Development, Northern Affairs and the Department of Regional Economic Expansion have different viewpoints. Improvements in management of the fishery may be possible with increased co-ordination of agencies.

4. Lake quotas vary and are specified on an annual basis. This reduces incentive to fishermen to purchase major assets. Thus, further analysis of factors affecting biological production is needed to increase the stability and predictability of quotas and thereby the fishing industry. (At South Indian Lake quotas have remained fixed.)

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[2] Net income from fishing per fisherman in 1969 was: $903 for 275 fishermen on Lake Manitoba (31 percent of total earned income); $1,309 for 630 fishermen on Lake Winnipeg (56 percent of net earned income); $826 for 96 fishermen on Lake Winnipegosis. See Ray England and R. Peters, Fisheries Adjustment Study (Winnipeg: Manitoba Department of Mines, Resources and Environmental Management, 1971). Net income from summer fishing ($22,880) and winter fishing ($12,040) for 100 fishermen at South Indian Lake in 1969 was $349 (see J.D. Collinson, ibid., p. 184).

5. Knowledge of market potential and actions to affect it are limited; as a consequence, future expansion of the industry and distribution of processing activity is uncertain.[3]

6. Specification of the relative income and employment potential of fishing (compared to forestry, trapping, manufacturing, recreation and welfare) as a component of the economic base of a community or region is required to permit an effective allocation of limited public resource development expenditures.

Purpose of the Study

The purpose of the study is to:

1. Develop a planning framework within which fishermen, co-ops and government objectives related to the fishing industry can be identified and implications of alternative resource development strategies analyzed.

2. Develop an approach appropriate for the analysis of the income and job potential of the fishing industry with special emphasis on: (a) biological relationships, including quotas, (b) fish harvesting, (c) transportation, (d) fish handling and processing by fishermen and co-operatives, (e) freshwater fish market potential, and (f) the community labor balance (potential of fishing relative to other job and income opportunities, including forestry, trapping, manufacturing, recreation and welfare, present in the economic base of northern communities).

3. Apply the approach to analysis of that portion of the northern Manitoba fishing industry presently and potentially associated with the South Indian Lake Fishermen's Co-operative.

The Planning Framework

Individual fishermen, producer groups (co-operatives) and governments are concerned with and involved in the fishing industry because of their interest in achieving certain objectives. The Manitoba government reflecting the wishes of Manitobans is concerned about the employment of northern residents and the conservation of natural resources. Fishermen are concerned with improving their income and level of living. Reaching such goals depends on several interrelated components best considered within an overview of the fishing industry (Figure 1).

---

[3] For example, "The demand for whole dressed fish has been declining and the demand for convenience items such as pan ready portions, individually frozen fillets, ready to eat breaded fillets and other similar items has been increasing." See Freshwater Fish Marketing Corporation, Annual Report 71-72 (Winnipeg: The Corporation, February, 1973), p. 4.

The framework outlined in Figure 1 consists of five interacting components:

1. Resource base (natural, social and human capital or resource stocks).
2. Resource use by sector (fishing, mining, forestry, energy, furs and recreation).
3. Development relationships (biological, social and economic).
4. Regional goals (income and jobs, viable co-ops, stay option, conservation, preservation and improved level of living).
5. Government policy and programs (improved quality of life, licensing, investment subsidies, hatcheries, fisheries management extension, merchandising and resource regulations).

Within the framework, the resource base, put to a particular combination of resource uses in the context of specific development relations, results in certain levels of goal achievement. Government programs serve to stimulate, modify and/or restrain the influence of certain elements of one or several components. Their purpose is to increase the level of achievement of selected goals.

Within the framework, the central issue is that of identifying the goals on which policymakers may place specific weights reflecting those issues that are important. (The process is that of selecting those goals which are to be emphasized in program development and expenditure.) Once goals have been specified, the task is to relate the resource base and existing and potential resource uses to those goals through the

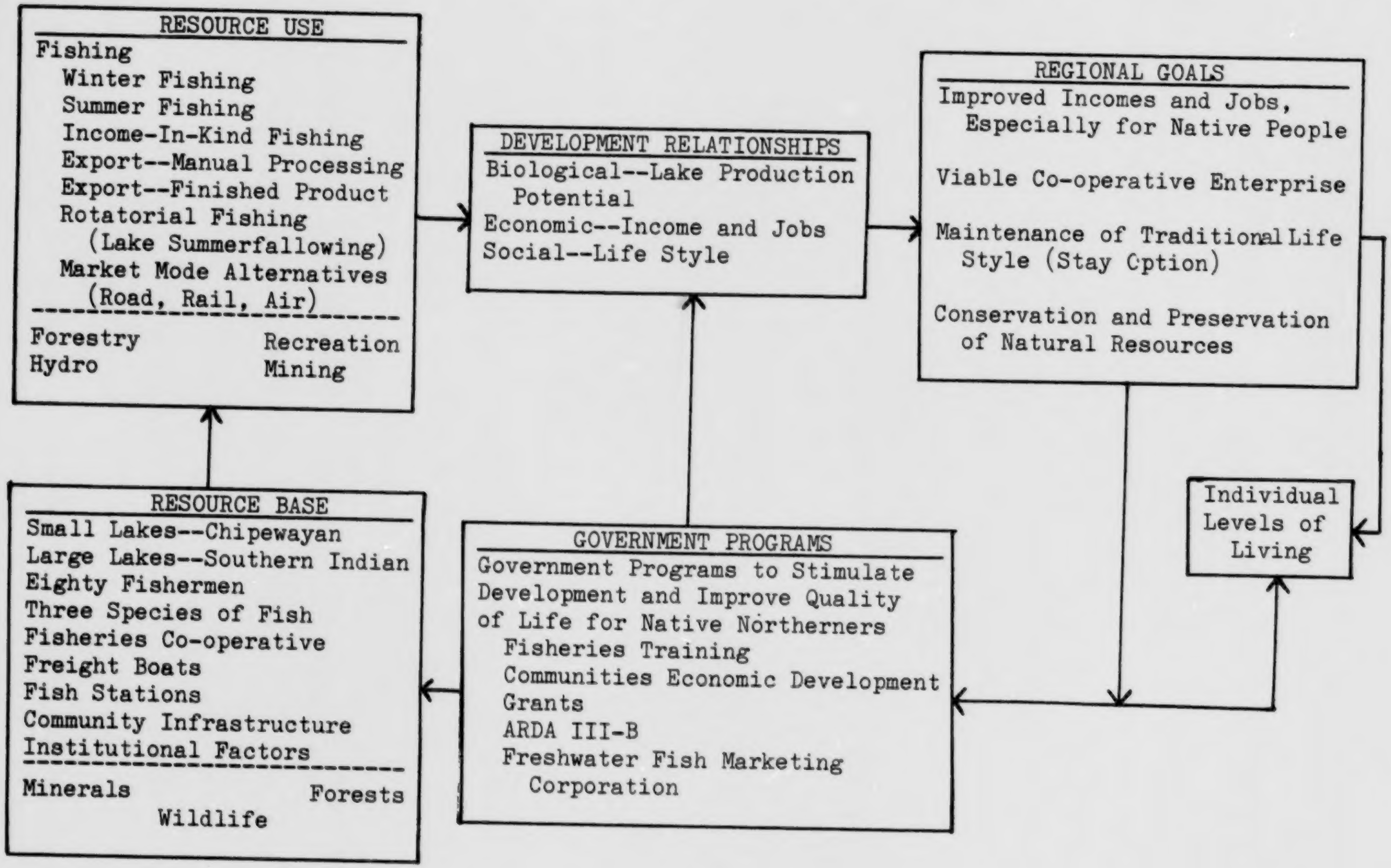
RESOURCE USE
Fishing
Winter Fishing
Summer Fishing
Income-In-Kind Fishing
Export--Manual Processing
Export--Finished Product
Rotatorial Fishing
(Lake Summerfallowing)
Market Mode Alternatives
(Road, Rail, Air)
Forestry
Hydro
Recreation
Mining
DEVELOPMENT RELATIONSHIPS
Biological--Lake Production Potential
Economic--Income and Jobs
Social--Life Style
REGIONAL GOALS
Improved Incomes and Jobs, Especially for Native People
Viable Co-operative Enterprise
Maintenance of Traditional Life Style (Stay Cption)
Conservation and Preservation of Natural Resources
Individual Levels of Living
RESOURCE BASE
Small Lakes--Chipewayan
Large Lakes--Southern Indian
Eighty Fishermen
Three Species of Fish
Fisheries Co-operative
Freight Boats
Fish Stations
Community Infrastructure
Institutional Factors
Minerals
Forests
Wildlife
GOVERNMENT PROGRAMS
Government Programs to Stimulate Development and Improve Quality of Life for Native Northerners
Fisheries Training
Communities Economic Development Grants
ARDA III-B
Freshwater Fish Marketing Corporation

Figure 1

A Planning Overview of the Northern Manitoba Fishing Industry identification of regional development relations. When the components and their interrelationships have been specified, it becomes possible to determine the impact of programs on goals that policymakers have selected as important.

An illustrative listing of possible goals that policymakers may choose for emphasis and weighting of the objectives is given in Table 1. The weighting is simply an illustrative example.

Table 1

Alternative Fishery Goals

Possible Regional Goals	Illustrative Weight[a]
Improved Income for Fishermen	10
Viable Fisheries Co-operatives	10
Fishermen Participation in Decision-Making	10
Maintenance of Traditional Life Style (Stay Option)	10
Fishing Industry Job Creation and Stability	8
Northern Industrialization and Development	6
Protection of the Environment	7
Production Efficiency in Fishing	4
Complementarity of Resource Use in Providing Jobs and Income from Fishing, Recreation, Mining, Energy Production and Forestry	6

[a] Weighting is on a 1-10 scale with 10 indicating goals of top priority.

Given the identification of a set of goals, the elements of each of the other components as outlined in Figure 1 can be analyzed. On completion of the model, it will be possible to indicate the impact of proposed policy and program alternatives on: (1) jobs and incomes in the fishing industry, (2) traditional life style, and (3) viability of fisheries co-operatives. The analytical model will be capable of showing the impact on goals of alternatives regarding quotas, fish prices, transportation of fish, primary production, and fish handling and processing.

DESCRIPTION OF THE SOUTH INDIAN LAKE SIMULATION MODEL

To facilitate discussion of the South Indian Lake Fishery, it is divided into seven elements (Figure 2). They include:

1. Alternative community and fishery objectives.

2. Biological relationships--which provide the commodity base for the fishery and on which the fishery depends for its raw inputs.

3. Fish harvesting--the activities involved in the harvesting of fish.

4. Fish transportation--the movement of fish to handling and/or processing points between lakeside and the Winnipeg market.

5. Fish processing and handling--those activities conducted to preserve the product during transport and in some instances process it in preparation for marketing.

6. The Freshwater Fish Marketing Corporation--the Transcona fish plant which markets the Co-operative's fish.

7. Community labor balance.

Alternative Community and Fishery Objectives

The fishery exists because of people with objectives. More particularily, it exists because of area fishermen, their families, their communities and their objectives. Alternative community and fishery objectives are as illustrated in Figure 3.

Depending on the importance community residents place on the ability to maintain traditional life styles (the stay option objective), alternatives are available: (1) within northern Manitoba, (2) in other Manitoba regions, and (3) outside the Province of Manitoba. Employment opportunities leading to improved incomes are available within northern Manitoba. The main opportunities are employment at the Sherritt-Gordon Ruttan Lake Mine or in related service industry employment at Leaf Rapids or with Manitoba Hydro. An additional alternative is to subsist on social welfare rather than employment income.[4]

The operation of the fishery provides residents in South Indian Lake communities with means by which to achieve employment, income, stay option (opportunity to remain in their community), production efficiency and other objectives important to them. Mining, Manitoba Hydro construction work, employment in service industries (restaurants, hotels,

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[4] Department of Northern Affairs, "Social and Economic Impact of the Nelson River Hydro Development (with Emphasis on South Indian Lake)" (preliminary report, June, 1973), p. 74, makes the following recommendation concerning life styles: "The residents of South Indian Lake need to be able to choose their lifestyle rather than being forced to change their way of life for economic reasons caused by the regulation of South Indian Lake. If they choose to preserve their present way of life, or if some wish to change their means of earning a livelihood and hence their lifestyle, assistance in the form of a variety of choices over time will be required."

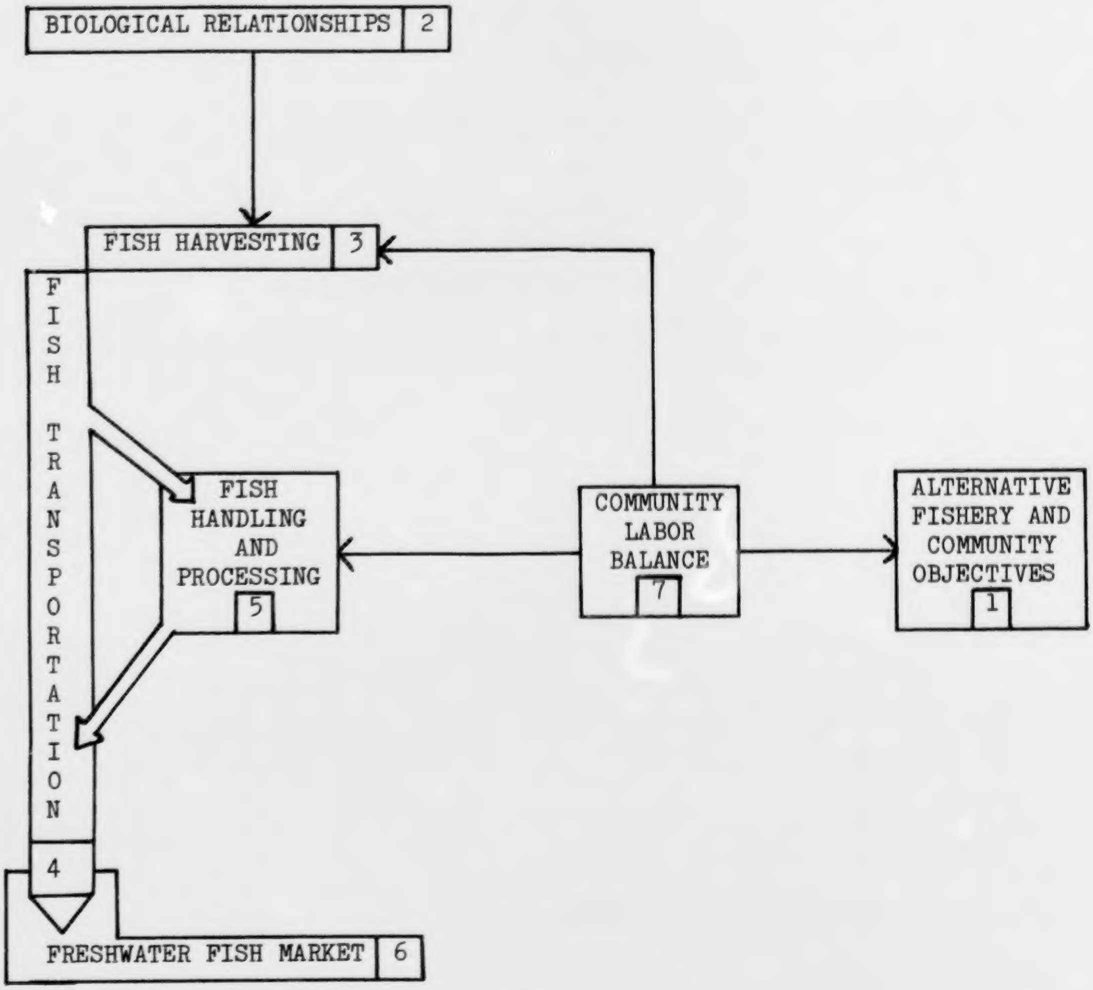
BIOLOGICAL RELATIONSHIPS
2
FISH HARVESTING
3
FISH TRANSPORTATION
4
FISH HANDLING AND PROCESSING
5
COMMUNITY LABOR BALANCE
7
ALTERNATIVE FISHERY AND COMMUNITY OBJECTIVES
1
FRESHWATER FISH MARKET
6

Figure 2

Elements of the South Indian Lake Fishery

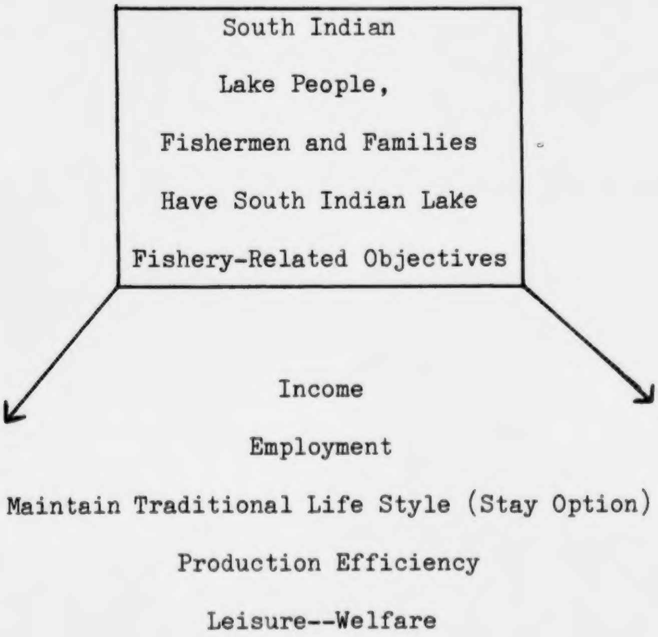
South Indian
Lake People,
Fishermen and Families
Have South Indian Lake
Fishery-Related Objectives
Income
Employment
Maintain Traditional Life Style (Stay Option)
Production Efficiency
Leisure--Welfare

Figure 3

Alternative Community and Fishery Objectives service stations) and receipt of social assistance in the community are alternative means of achieving objectives (Figure 4). The activity(s) local residents choose as means of achieving their objectives depend(s) on: (1) which objectives they consider to be most important, (2) which activity contributes most to realizing those objectives considered most important, and (3) the continued availability of particular activities. Past trends indicate a substantial reduction in the number of fishermen and flooding may reduce the potential of fishing as a means of achieving objectives.

Biological Relationships

The productive capacity of lakes is dependent on a number of factors, including water levels, water temperature, presence of good spawning grounds and availability of food. Fisheries biologists have devoted considerable effort to the determination of the effect of such influential factors on the biological productivity of lakes and methods of promoting the stabilization of factors affecting productive capacity in order to stabilize quotas and hence fish production. A biological study of South Indian Lake reports that in the natural state the present quota of 800 thousand pounds for the summer and 400 thousand pounds for the winter fishery are sustainable. Trends indicate a reduction in number of fishermen. In addition, it is noted that the sustainable yield (which appears to be greater than the present quota) will likely be lowered slightly by the flooding.[5]

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[5] Kenneth W. Weagle and Warren Baxter, "The Fisheries of South Indian Lake: Exploitation and Reproduction" (report prepared for the Lake Winnipeg, Churchill and Nelson River Study Board, October, 1973), Sections 5 and 7.

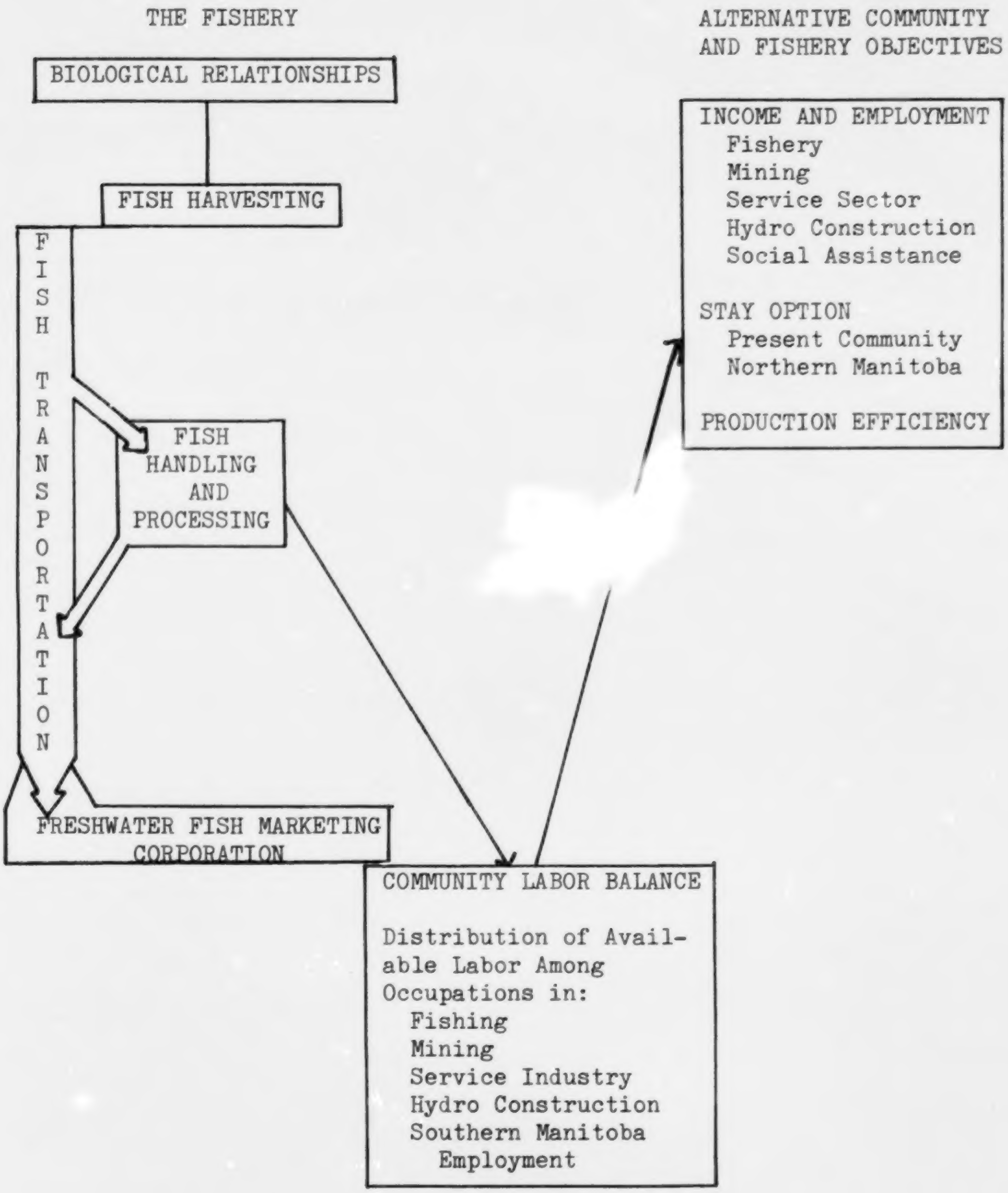
THE FISHERY
ALTERNATIVE COMMUNITY AND FISHERY OBJECTIVES
BIOLOGICAL RELATIONSHIPS
FISH HARVESTING
FISH TRANSPORTATION
FISH HANDLING AND PROCESSING
FRESHWATER FISH MARKETING CORPORATION
INCOME AND EMPLOYMENT
Fishery
Mining
Service Sector
Hydro Construction
Social Assistance
STAY OPTION
Present Community
Northern Manitoba
PRODUCTION EFFICIENCY
COMMUNITY LABOR BALANCE
Distribution of Available Labor Among Occupations in:
Fishing
Mining
Service Industry
Hydro Construction
Southern Manitoba Employment

Figure 4

The South Indian Lake Fishery, People and Alternatives to Fishing in Perspective

It is possible to synthesize such information by means of quantitative projection models to analyze effects of alternative assumptions on sustained yields. For example, it is reported that silting will reduce whitefish spawning and high water levels may affect walleye spawning.

Fish Harvesting

From either a fishery manager's or the South Indian Lake fishermen's point of view, it is necessary to establish the objective of management of the biological resource. It is possible that the point of view of the fishermen and the fishery manager will differ. One objective is to maximize average annual net earnings, including income-in-kind for the 59 fishermen who fished in 1972. A second is to maximize the number of fishermen allowed to utilize the resource subject to the condition that they all derive a "reasonable" net income from harvesting the fish resource. Training programs and loans to assist entry may be required in lieu of the fact that most of the northern fishermen are of native ancestry, possessing low levels of education and employment skills, and that the availability of "real" alternative employment is limited, one might be inclined to choose the latter alternative. A third alternative is to maintain the current production and income levels of 1972. A further alternative is to permit non-South Indian Lake fishermen to harvest fish to ensure maximum net returns from the fishery.[6]

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[6] The fishery refers to the combination of: (1) all South Indian Lake residents who want to fish, (2) the processing and handling and transportation alternative that provides making net returns, and (3) the required number of profitable permits to harvest the economic option volume. According to James Crutchfield and Arnold Zellner,

(footnote 6 continued on p. 13)

In modeling alternatives as listed above, the distribution of production and cost levels are required. Relevant costs to the fishermen broadly include:

1. Costs of capital used in the fishing operation.

2. Labor costs--the value of his own time plus that of any hired help.

3. Operating costs--the costs incurred in daily fishing operations (i.e., gasoline, grubstake, repairs, etc.).

4. Revenues lost due to cullage.

On the larger northern lakes (e.g., South Indian Lake), the following alternative types of operations will be considered for summer and winter seasons (Figures 5 and 6):

1. Summer season: (a) one-man skiff operation, (b) two-man skiff operation, and (c) whitefish boat operation.

2. Winter season: (a) bombardier-snowmobile operation, (b) bombardier operation, and (c) dog team operation.

At the level of the primary producer, analyses will be conducted to estimate, on a per season basis, which type of operation provides the highest net economic return for the fisherman. Other management

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(footnote 6 continued)
"Economic Aspects of the Pacific Halibut Industry", Fishing Industrial Research, 1:27, No. 1, 1962, the economic optimum fishery requires that: (1) the right catch be taken with the minimum cost, (2) the industry should be able to develop and adopt new and better techniques, and (3) the returns to labor and capital should equal those earned in other economic activities and be as stable as possible. They point out that the right catch will normally be less than the maximum physical yield. Potential benefits to the South Indian Lake Fishermen's Co-operative and the South Indian Lake member fishermen can be illustrated with reference to the loss of returns due to the low level of fishing in the winter of 1973. The quota of 400 thousand pounds at a price of 18 cents to fishermen represents a loss of $72 thousand. It might have been possible for the Co-operative to encourage non-Southern Indian Lake fishermen in order to provide income to the Co-operative.

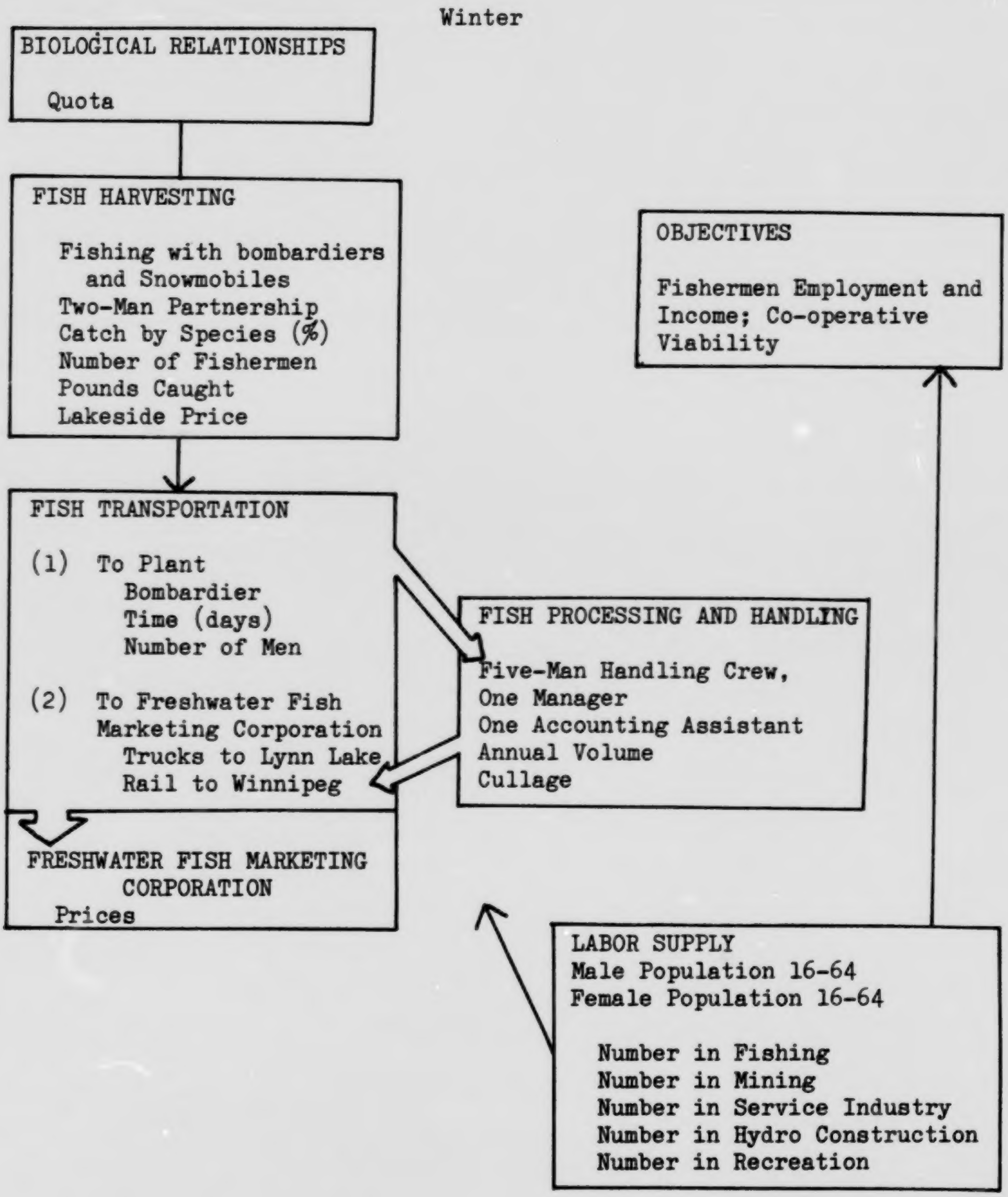
Winter
BIOLOGICAL RELATIONSHIPS
Quota
FISH HARVESTING
Fishing with bombardiers and Snowmobiles
Two-Man Partnership
Catch by Species (%)
Number of Fishermen
Pounds Caught
Lakeside Price
OBJECTIVES
Fishermen Employment and Income; Co-operative Viability
FISH TRANSPORTATION
(1) To Plant
Bombardier
Time (days)
Number of Men
(2) To Freshwater Fish Marketing Corporation
Trucks to Lynn Lake
Rail to Winnipeg
FISH PROCESSING AND HANDLING
Five-Man Handling Crew,
One Manager
One Accounting Assistant
Annual Volume
Cullage
FRESHWATER FISH MARKETING CORPORATION
Prices
LABOR SUPPLY
Male Population 16-64
Female Population 16-64
Number in Fishing
Number in Mining
Number in Service Industry
Number in Hydro Construction
Number in Recreation

Figure 5

Components and Factors to be Considered in Analysis of the Winter Fishery

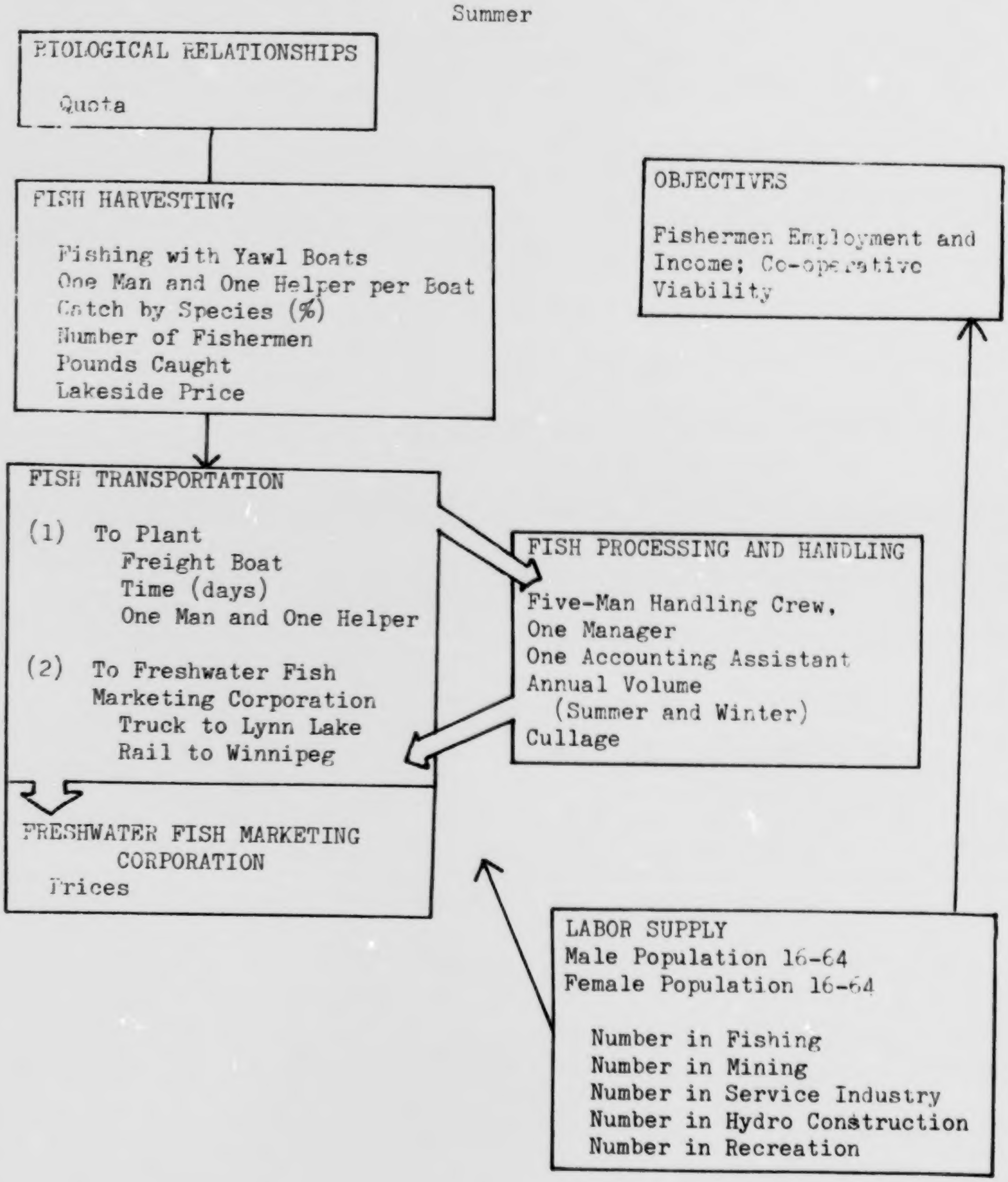
Summer
BIOLOGICAL RELATIONSHIPS
Quota
FISH HARVESTING
Fishing with Yawl Boats
One Man and One Helper per Boat
Catch by Species (%)
Number of Fishermen
Pounds Caught
Lakeside Price
OBJECTIVES
Fishermen Employment and
Income; Co-operative
Viability
FISH TRANSPORTATION
(1) To Plant
Freight Boat
Time (days)
One Man and One Helper
(2) To Freshwater Fish
Marketing Corporation
Truck to Lynn Lake
Rail to Winnipeg
FISH PROCESSING AND HANDLING
Five-Man Handling Crew,
One Manager
One Accounting Assistant
Annual Volume
(Summer and Winter)
Cullage
FRESHWATER FISH MARKETING
CORPORATION
Prices
LABOR SUPPLY
Male Population 16-64
Female Population 16-64
Number in Fishing
Number in Mining
Number in Service Industry
Number in Hydro Construction
Number in Recreation

Figure 6

Components and Factors to be Considered in
Analyses of the Summer Fishery

objectives will be integrated into the schemata for management purposes. This will follow from a detailed examination of the relevant alternative costs and revenues associated with the different modes of operation. Some of the relevant cost and revenue components are discussed on the following pages.

Relevant revenues or returns include the value of the fish harvested, which consists of pickerel, whitefish, pike and lake trout (not found in all northern lakes, e.g., South Indian Lake). At present, the harvest of rough fish (suckers, etc.) is not economically viable to any significant extent. An important question is: "At what price does locally processed mullet become economic?"

Since most lakes have two seasons (summer and winter) in which the type and magnitude of costs incurred vary significantly, the cost components of each season will be discussed separately.

Summer season. Under the capital component of the cost structure, the following variables are relevant: boat costs, motor and associated costs, and cost of nets.

The boat costs incurred in the operation largely depend on the type of boat being used, i.e., a whitefish boat (inboard motor) or a skiff (yawl) with an outboard motor. In remote northern areas of Manitoba, whitefish boats must, at present, be brought in from the southern part of the province. Information must be obtained regarding costs of transporting the boats to the various lakes if more than the one whitefish boat presently at the lake are to be considered. The use of a whitefish boat also entails the hiring of additional manpower. Yawls or skiffs are probably more preferred for use on the northern lakes since the initial costs incurred in procuring a skiff and outboard motor are significantly less than that of a whitefish boat. Another relevant consideration is that the skiffs or yawls are more convenient for personal transportation between settlements and require less costly repairs.

The cost of nets will be allocated on a per season basis. The other costs associated with nets are the costs of corks, leads, etc., and the cost of the labor involved in repairing them. Information on licencing, quotas and legal net yardage is also required, because on some lakes the licence-holders are authorized to fish additional yardage for each hired man employed under one licence. The higher returns associated with the use of more yardage[7] could possibly outweigh the increased costs associated with hiring more men. This margin could provide a sufficient incentive to hire extra help. Information on the regulations regarding permissible mesh size is also required. Usually a range of permissible mesh size (e.g., mesh size is to be not less than 4 1/4 inches and not greater than 5 1/4 inches) is authorized by the fishery managers. The relationship between mesh size, biological sustained yield and income to fishermen is important.

Winter season. The characteristic difference between the winter season and the summer season is that the bombardier and snowmobile replace the boat as a means of transportation to and from the fishing grounds. Thus, information of the differential costs incurred in using a snowmobile, dog team, bombardier or a combination of the three, and ice augers and/or jiggers must be acquired. These include initial purchase costs, depreciation, repair and maintenance costs, and operating costs. If different nets are used then an attempt must be made to assess the costs of the nets used.

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[7] Each licence holder can have up to 1,500 yards and this is well above the yardage in use.

In the winter and summer fishery, a certain portion of the costs incurred (i.e., transportation) can be attributed to personal use. Similarly, a certain portion of the fish produced are used for personal consumption and these factors affect real cost and income factors for the fishermen.

In a recent study on Lake Winnipeg directed by Dr. Ray England,[8] an attempt was made to estimate the value of production lost due to cullage of spoiled fish resulting from the irregularity of net-lifting. By estimating the production that would have occurred if the fishermen had lifted their nets every day and comparing that figure to the actual poundage landed, it was found that the cullage in the 1969 summer whitefish-pickerel fishery caught off Grand Rapids was about 42 percent of the landed production, i.e., about 30 percent of the potential production from this area may have been culled due to spoilage.

In the northern lakes, the problem of cullage due to spoiled fish is also dependent on the time required to get the fish from the lakes to the processing plant. In the winter, ice serves to prevent fish from freezing for marketing in fresh form. The lack of facilities to keep the fish on ice and transport time are at the heart of the problem. This situation could possibly be alleviated by fishing the remote smaller lakes only during the winter, since ice would be available then. Another possibility is to set up ice-houses at certain vantage points on these lakes. However, such a scheme in operation on Lake Winnipeg has not proven very successful. These and other factors affecting cullage are considered.

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[8] Ray England and R. Peters, F.R.E.D. Fisheries Adjustment Study (Winnipeg: Manitoba Department of Mines, Resource and Environmental Management, 1971), p. 207. As a rule of thumb the shelf life of a fresh fish is 12-14 days if handled properly; that is, packed in ice immediately. Every repack reduces shelf life by one day.

Processing and Handling

After the fish have been taken from the water, the next problem encountered is that of processing and handling the harvest, i.e., what method or mix of methods is optimal in preparing the fish for export to the retail markets. A particular processing plant could potentially perform one or all of the following functions: dressing the fish, filleting, freezing and storage, packaging, conversion of fish into convenience foods, canning and marketing. The question then becomes one of determining net profit levels for each of these processes; consequently, information on the additional costs incurred is required. In Manitoba there are several processing plants and the question becomes one of determining the optimal mix of functions to be performed by each plant and the optimum number and distribution of plants. Cost minimization is considered among objectives affected by plant capacity constraints, constraints relating to the cost of transporting the fish from one plant to another, and relating to equity considerations such as area employment objectives (the objectives, biological relationships, fish harvesting, and processing and handling are integrated in Figure 7).

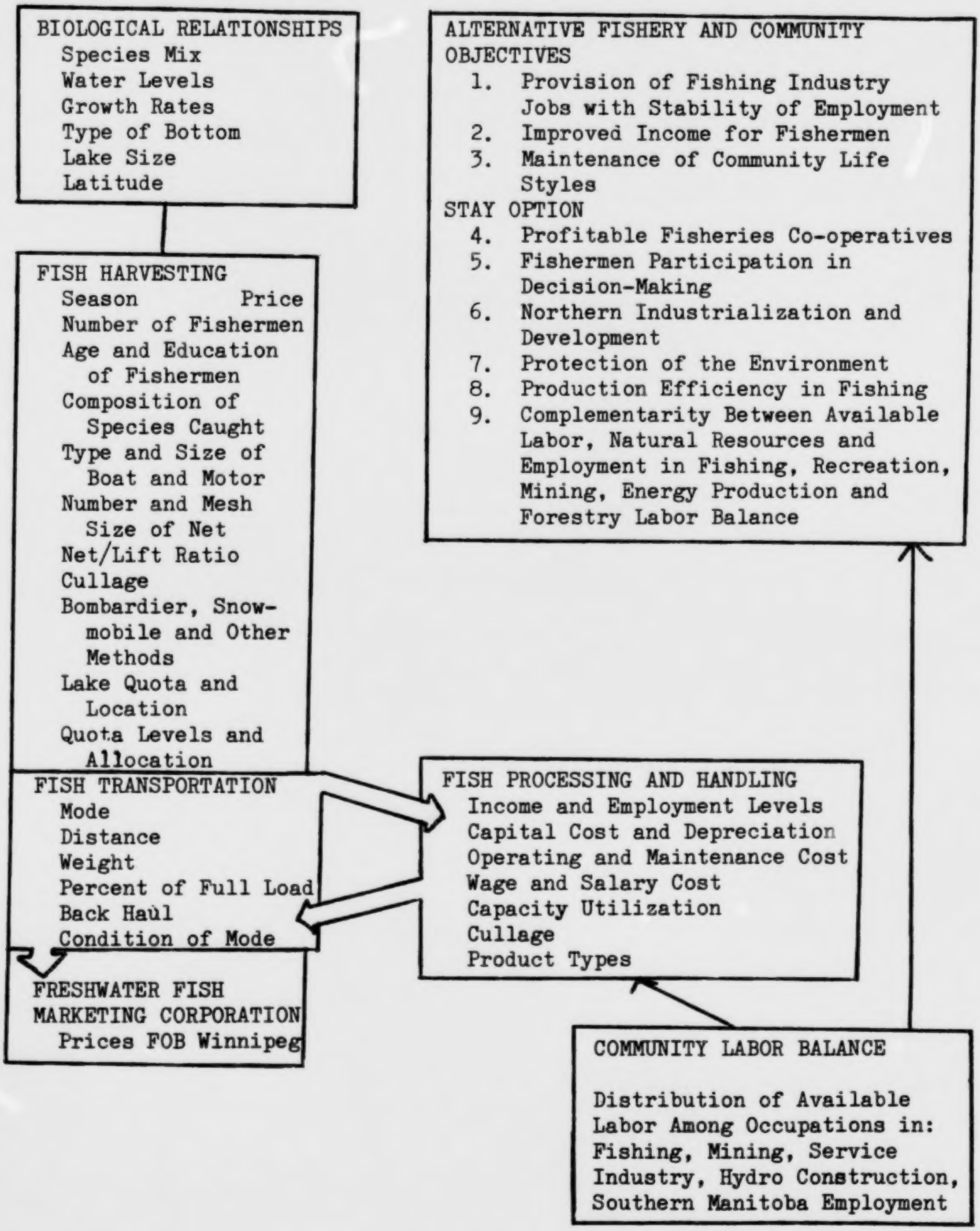
BIOLOGICAL RELATIONSHIPS
Species Mix
Water Levels
Growth Rates
Type of Bottom
Lake Size
Latitude
FISH HARVESTING
Season
Price
Number of Fishermen
Age and Education of Fishermen
Composition of Species Caught
Type and Size of Boat and Motor
Number and Mesh Size of Net
Net/Lift Ratio
Cullage
Bombardier, Snowmobile and Other Methods
Lake Quota and Location
Quota Levels and Allocation
FISH TRANSPORTATION
Mode
Distance
Weight
Percent of Full Load
Back Haul
Condition of Mode
FRESHWATER FISH MARKETING CORPORATION
Prices FOB Winnipeg
ALTERNATIVE FISHERY AND COMMUNITY OBJECTIVES
1. Provision of Fishing Industry Jobs with Stability of Employment
2. Improved Income for Fishermen
3. Maintenance of Community Life Styles
STAY OPTION
4. Profitable Fisheries Co-operatives
5. Fishermen Participation in Decision-Making
6. Northern Industrialization and Development
7. Protection of the Environment
8. Production Efficiency in Fishing
9. Complementarity Between Available Labor, Natural Resources and Employment in Fishing, Recreation, Mining, Energy Production and Forestry Labor Balance
FISH PROCESSING AND HANDLING
Income and Employment Levels
Capital Cost and Depreciation
Operating and Maintenance Cost
Wage and Salary Cost
Capacity Utilization
Cullage
Product Types
COMMUNITY LABOR BALANCE
Distribution of Available Labor Among Occupations in: Fishing, Mining, Service Industry, Hydro Construction, Southern Manitoba Employment

Figure 7

Components and Component Elements to be Analyzed
Together with Objectives to be Considered

With regard to the South Indian Lake Fishermen's Co-operative's Leaf Rapids plant, any analysis would require the determination of various cost alternatives such as:

1. Lakeside handling only (no Leaf Rapids involvement) and direct shipment of fish harvested to the plant in Winnipeg.

2. Handling only (at Leaf Rapids).

3. Handling and processing (filleting, etc.).

If we assign specific quotas for a lake or set of lakes[9] we can, regardless of the type(s) of function performed by the processing plant, ask the following questions and seek types of information required to analyze the effect of increasing the quotas:

1. What additional costs would be incurred by the addition of processing to the plant with regard to capital expansion, i.e., is the plant presently utilized to full capacity or is it underutilized?

2. What additional labor costs would be incurred and is the available labor skilled or unskilled?

3. What additional transportation costs would be incurred in transporting the fish to another plant for further processing or to the export market?

4. Does the average cost per pound incurred by the plant depend solely on the volume of fish processed or is there some type of interaction between volume and the volume of certain types of species (economies of scale in processing)?

The question relating to the optimal mix of functions to be performed by each of the processing plants requires detailed information on such factors as:

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[9] Given allocation of certain lakes to recreational use and selective fishing of lakes surrounding South Indian Lake.

1. The additional costs incurred in adding another function to an existing plant relative to performing that function in another plant. This requires detailed information on the alternative cost structures of the various plants, transportation cost information, information on the employment-generating (or reducing) effects, availability of suitably skilled manpower, interregional wage structures, area income effects and costs incurred in creating the additional plant capacity.

2. Information on possible alternative uses for facilities that are already constructed. If a particular plant is continually operating at a net loss, then it is possible that an analysis would indicate that the plant should be completely shut down and allow a more efficient plant to handle its entire production. If such was the case in a northern region, then the facilities might be used for other purposes (e.g., recreation). This would have less detrimental effects on the employment and income situation of the area.

The South Indian Lake Co-operative along with the Manitoba Department of Co-operative Development might be interested in examining the following alternatives for the South Indian Lake Fishermen's Co-operative's Leaf Rapids plant:

1. Total capital write-off of the debt load in 1974.

2. Partial capital write-off of the debt load of varying proportions (25, 50 and 75 percent in 1974).

3. Changes in the volume of catch on viability.

4. Developing the capacity for various degrees of processing including deboning, filleting and making fish meal.

5. Comparing estimated costs of transportation, handling, administration and boxes with the Freshwater Fish Marketing Corporation agency fees.

6. Alternate transportation modes: truck-rail, all truck or air from outer lakes.

To undertake the analysis, the following information is necessary:

1. The detailed list of assets owned by the Co-operative.

2. The detailed financial statement for the 1973 summer season.

3. The projected financial statement of the Co-operative and related assumptions concerning labor costs, retailing, meals and accommodation, and lakeside facilities.

ansportation

Transportation modes and linkages which provide for the prompt delivery of fish to processing plants and fresh fish markets are critical. Delayed pickups lead to high cull rates and decreased returns.

Fish from northern Manitoba lakes may be transported to handling and processing locations and markets by one or several of four modes for each of the summer and winter seasons. Those modes are freight boat,[10] air, truck and rail. In the analysis of South Indian Lake and associated remote lakes, utilization of each of water, road, rail and air transport modes and combinations of modes are analyzed. The schematic diagrams presented in Figures 8 and 9 indicate the feasible summer and winter transport modes identified for consideration.

Aircraft of more than one kind may be used and may fly with less than full loads. Implications of selected types of aircraft and varying load factors are considered.

Market Analysis

The long-term viability and stability of the fishing industry is contingent on the existence of market demand. Several alternatives were available for the treatment of this study dimension, namely:

1. Assuming that market demand for fish will remain stable at levels sufficient to absorb Co-operative Marketings whatever their volume.

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[10] Bombardier or tractor train for winter haulage.

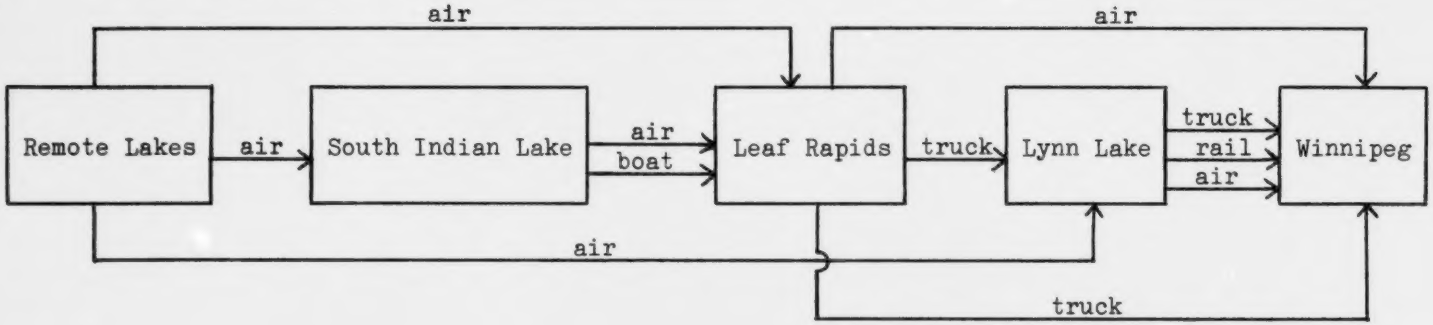
air
air
Remote Lakes
air
South Indian Lake
air
boat
Leaf Rapids
truck
Lynn Lake
truck
rail
air
Winnipeg
air
truck

Figure 8

Feasible Remote and South Indian Lake Summer Transportation Modes Identified for Inclusion in the Analysis

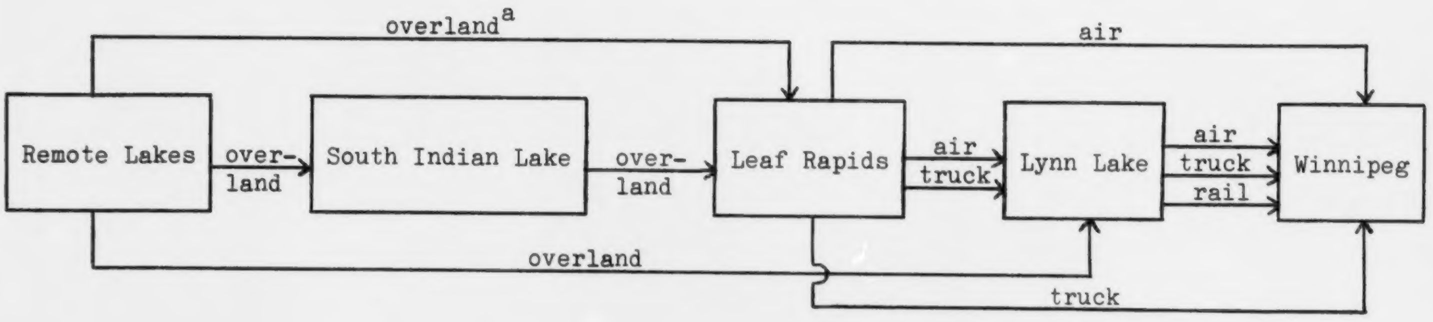
Remote Lakes
South Indian Lake
Leaf Rapids
Lynn Lake
Winnipeg
overland[a]
air
over-land
over-land
air
truck
air
truck
rail
overland
truck

Figure 9

Feasible Remote and South Indian Lake Winter Transportation Modes Identified for Inclusion in the Analysis

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[a] Bombardier or tractor train.

2. Estimating future market demand through the construction of market demand functions estimated in terms of the major determinants of fish demand--income, population, pricing of fish and fish substitutes.[11] Such demand analysis will not be emphasized in this study.

Alternative one was selected.

Community Labor Balance

The well-being of a community or region is determined by its economic resource base and the effectiveness with which it is used to achieve specified objectives. In northern Manitoba, fishing is one way in which the resource base may be used. Others include forestry, recreation, energy production and mining. To analyze the fishing industry without considering resource use alternatives is to ignore several basic issues. The following questions reflect those issues:

1. If the members of the community labor force employed in the fishing industry do not fish, will other employment opportunities be available and, if available, would they generate high or low income relative to fishing?

2. Is the community economic base such that future employment opportunities will exceed the available labor force or will unemployment exist even given full utilization of the economic base? In other words, is there a balance between available labor and available jobs or does one exceed the other?

In the proposed analysis, employment opportunities available from all dimensions of the economic base will be analyzed to the extent necessary to determine the presence or absence of competition between labor for fishing and labor for alternate employment-creating economic activity. Absence of employment alternatives would indicate that reduction in jobs and income in fishing would increase welfare expenditures. Ideally, the analysis would show the impact on jobs and income of alternative levels of public resources development by sector. Critical issues from a public sector point of view concern:

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[11] See Department of Fisheries of Canada and The Fisheries Research Board, The Commercial Fisheries of Canada, Royal Commission on Canada's Economic Prospects (Ottawa: Queen's Printer, 1956), for an example of such analysis.

1. The number of South Indian Lake residents in the potential work force (an estimated 265 people in the 15-65 age group) who desire particular alternative employment and income alternatives, including fishing, trapping, mining, trades or service jobs in Leaf Rapids, jobs in Winnipeg or other centers, and welfare.

2. The public costs of assisting South Indian Lake residents to achieve satisfactory income levels by means of the alternatives.

Given the seven elements of the South Indian Lake Fishery identified and discussed, a detailed simulation model was developed and used to analyze the fishery. That model and the data utilized in it are presented in Appendix A and B of the report.

ALTERNATIVE SIMULATION RUNS EMPHASIZING FISH HARVESTING, HANDLING AND PROCESSING, AND TRANSPORTATION

The number of alternate sets of conditions which can be studied using the model was extremely large. However, the number of of real alternatives (alternatives which may be pursued in the fishery) is limited. Our task is to select that set of alternatives which would be most useful in relation to decisions to be made. Discussion of the fishery and alternatives with staff of the Department of Mines, Resources and Environmental Management, and the Department of Co-operative Development lead to identification of the following factors as prime areasto consider:

1. Plant capital costs.
2. Volume of fish harvested.
3. Transportation modes.
4. Type(s) of fish enterprise(s).
5. Cullage.
6. Harvesting of rough fish.
7. Increased processing.
8. Outlake fishing.

Six of the factors listed were studied in relation to the actual nature of operations in 1972-73, i.e., the fishery was anlyzed using the model for conditions as they actually existed in 1972-73. Then each of the first six factors listed above was varied (one at a time) and the effects on particular things in the fishery noted.

The first factor studied was that of capital costs associated with the Leaf Rapids plant. A major component of plant costs is that of servicing the debt incurred to construct the Leaf Rapids plant. The impact of reducing that capital debt on annual operating expenses was studied by analyzing alternate levels of plant capital write-off. Four levels of write-off (e.g., 25, 50, 75 and 100 percent) were analyzed. In addition, one simulation that assumed that no plant existed was run. In that case, fish were simply transported directly from the dock at Leaf Rapids to the Freshwater Fish Marketing Corporation.

The second factor varied was volume of fish harvested. The 1972-73 volume was some 1.2 million pounds. To determine the impact of fluctuations in volume that may result from lake flooding or other factors such as a change in fishing effort, volumes above and below the 1972-73 level were considered. Those selected were 600 thousand pounds, 780 thousand pounds, 1.5 million pounds and 2 million pounds. The assumed changes in volume were made proportionate to catch by season in 1972-73.

Transportation mode alternatives was the third factor studied. In the 1972-73 fishery, fish were transported from lakeside to the Leaf Rapids plant by fish boat in the summer season and by bombardier in the winter season. From the Leaf Rapid plant, the fish travelled to Lynn Lake by truck and from there to the Freshwater Fish Marketing Corporation in Winnipeg by rail. Two modifications of the 1972-73 transportation system were studied. First, the impact of transporting fish from lakeside to Leaf Rapids by air in winter was considered. This adjustment, while not considered feasible by many involved in the fishery, was included to illustrate what effect such a change would have. The second modification considered was that of transporting the fish from the Leaf Rapids plant directly to the Freshwater Fish Marketing Corporation by truck. While such a modification was not possible during 1972-73, road construction now completed makes such modification possible.

Changes in types of fishing enterprises, the fourth factor varied, were made relative to the 1972-73 situation. The 1972-73 summer situation involved one- and two-man skiff, yawl and canoe operations. The winter situation for that year involved dog team, skidoo-bombardier and bombardier operations. Two alternatives with respect to fishery enterprise types were studied. In the first, the summer fishery was assumed to involve only one man yawl fishing enterprizes.

In the second, the summer fishery was assumed to be based on only two-man yawl operations and the winter on only skidoo bombardier operations.

The fifth modification dealt with cullage. The impact on the fishery of a reduction of one half (50 percent) in cullage relative to the 1972-73 level was analyzed.

The sixth and final factor considered was the harvesting of rough fish caught. The simulation model constructed provides for the consideration of increased processing and the introduction of outlake fishing (factors 7 and 8). However, data availability and timing necessitated the elimination of those alternatives from consideration in the present study.

The detailed results of the six modifications analyzed are present in Appendix C. Appendices D and E present the results of analyses conducted concerning transportation and the South Indian Lake labor balance. The summary of study results is presented in the first section of this report.

OVERVIEW AND ASSUMPTIONS REVIEWED:

Objectives

The objectives of the study were to:

1. Develop a planning framework within which fishermen, co-ops and government objectives related to the fishing industry can be identified and implications of alternative resource development strategies analyzed.

2. Develop an approach appropriate for the analysis of the income and job potential of the fishing industry with special emphasis on: (a) biological relationships, including quotas, (b) fish harvesting, (c) transportation, (d) fish handling and processing by fishermen and co-operatives, (e) freshwater fish market potential, and (f) the community labor balance (potential of fishing relative to other job and income opportunities, including forestry, trapping, manufacturing, recreation and welfare, present in the economic base of northern communities).

3. Apply the approach to analysis of that portion of the northern Manitoba fishing industry presently and potentially associated with the South Indian Lake Fishermen's Co-operative.

Study Approach

Since the operation of a fishery involves many types of activities that influence and interact with one another, a study approach involving the following steps was taken:

1. The major activity components of the fishery were identified.

2. The nature of interrelationships within each component and between components was established.

3. A simulation model of the components and the interrelationships (a computer program describing the fishery) was constructed.

4. After securing the necessary data, the simulation model (computer program) was quantified.

5. Factors that would and/or could be modified in the fishery in the future (alternative ways of operating the fishery) were identified.

6. The model was used to analyze the 1972-73 fishery situation and situations that would result if identified alternatives were followed.

Seven activity components were identified in the fishery, namely, alternative fishery and community objectives, biological relationships, fish harvesting, fish transportation, fish handling and processing, the Freshwater Fish Marketing Corporation and community labor balance. Interrelationships established within and between components are illustrated in Figures 2, 4, 5, 6 and 7.

Alternative Analyzed

The 1972-73 conditions and basis on which the plant was operated and 15 alternatives were analyzed. The alternatives analyzed were:

1. Operate the fishery as in 1972-73 with government write-off (forgiveness) of 25 percent of plant capital.

2. Operate the fishery as in 1972-73 with government write-off (forgiveness) of 50 percent of plant capital.

3. Operate the fishery as in 1972-73 with government write-off (forgiveness) of 75 percent of plant capital.

4. Operate the fishery as in 1972-73 with government write-off (forgiveness) of 100 percent of plant capital.

5. Remove the Leaf Rapids Plant from the fishery through sale or allocation to alternative non-fishery use, transfer the fish delivery to Leaf Rapids directly to refrigerated units and ship it direct to Transcona.

6. Decrease annual fish catch to 600 thousand pounds.

7. Decrease annual fish catch to 780 thousand pounds.

8. Increase annual fish catch to 1,500 thousand pounds.

9. Increase annual fish catch to 2 million pounds.

10. Transport fish from lakeside to Leaf Rapids by air in winter.

11. Transport fish direct from Leaf Rapids to Transcona by truck.

12. Harvest the entire summer catch with one-man yawl fishing enterprises.

13. Harvest the entire summer catch with two-man yawl (partnership) enterprises and harvest the entire winter catch with two-man bombardier-snowmobile operations.

14. Reduce cullage by 50 percent.

15. Harvest all rough fish caught.

Assumptions Made

In order to conduct the analysis, the following assumptions were required:

1. The number of enterprises of each type in both the summer and winter fishery was proportional to those for which the research staff of the Freshwater Institute had enterprise records.

2. Each species caught constituted the same proportion of total catch in winter and summer for all runs.

3. Transportation rates were constant for each mode used.

4. Fish prices graded and packed in appropriate boxes FOB Transcona were constant at the following levels by species:

WINTER PRICES GRADED AND PACKED IN APPROVED BOXES: FOB TRANSCONA

	Grade	Dollars per pound
Whitefish Export Dressed (Standard):	Jumbo	.51
	Large	.45
	Medium	.35
	Small	.24
Pickerel Headless and Dressed		.645
Northern Pike Dressed Head On		.225
Mullets Headless Dressed		.08

SUMMER PRICES GRADED AND PACKED
IN APPROVED BOXES: FOB TRANSCONA

	Grade	Dollars per pound
Whitefish Export Dressed (Standard):	Jumbo	.49
	Large	.44
	Medium	.35
	Small	.24
Pickerel Headless and Dressed		.575
Northern Pike Dressed Head On		.245
Mullets Headless Dressed		.08

5. Annual depreciation rates for fishing enterprises and the Leaf Rapids plant were fixed at the following rates by item:

Fishermen's Equipment

Harnesses, Toboggans (for the dog team)	33 1/3%
Bombardier	10%
Yawl Boat	14.3%
Motor	33 1/3%
Nets	50%
Leads and Buoys	20%
Cabin at Lakeside	10%

Leaf Rapids Plant

5 percent of total assets

6. Plant and lakeside employees could not be employed for less than one season and the minimum Leaf Rapids plant operation staff consists of one manager, one foreman and one bookkeeper.

7. Interest on investments was fixed at 8 percent per annum for fishing enterprises and plant assets.

8. The fees paid by the Freshwater Fish Marketing Corporation and/or levied by the Co-operative and (except for the case of rough fish where fishermen were assumed to receive 3 cents per pound) deducted from prices paid to fishermen for each of: (a) rough fish, and (b) all other species were as illustrated in the following statement.

Pricing of South Indian Lake fish.[a] Estimates of the season lake production are made based on past trends and agents' judgement. A sales forecast is made on the basis of a safe selling price per pound for both frozen and fresh and a percent of the market for each of frozen and fresh. A mean selling price FOB the Transcona plant is established. Using the illustrative price of Continental Medium Whitefish at 43½ cents (net of 5¢/lb. freezing cost), the lakeside price is derived by deducting the following costs:

A. Leaf Rapids to Winnipeg ($/lb)

--Freshwater Fish Marketing Corporation Agent in this case is the South Indian Lake Co-operative (5¢ ice, packing, labor, 3¢ administration, clerical, and interest on capital)	.08
--Northern Box Allowance	.02
--Rail transportation costs from Lynn Lake to Winnipeg	.045
--Truck transportation form Leaf Rapids to Lynn Lake	.02
	$ .165

B. Transcona Costs ($/lb)

--Administration plus interest	.03
--Sales promotion and quality control	.01
--Pool reserve	.02
--Labor, handling and markdowns	.01
--Total	$ .235
--Remainder as payment to fishermen	$ .20

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[a] Summary of discussion with Mr. S. Sigurdson, Manitoba Zone Manager, Freshwater Fish Marketing Corporation, March 8, 1974

It was noted that the Co-operative is the Freshwater Fish Marketing Corporation agent for fish purchases at South Indian Lake, but it is possible for fishermen to sell direct to the FRESHWATER FISH MARKETING CORPORATION in Winnipeg. The $4\frac{1}{2}$¢/lb. is based on CNR rates for carload lots. If less than carload lots are shipped, the rate per pound will be higher. The 2¢/lb. truck charges for Leaf Rapids to Lynn Lake ensured good service in 1973 with no back charges in contrast to the 1972 experience. The box allowance of 2¢/lb. does not cover the delivery cost of the boxes (.5¢/lb.) but this is absorbed by the Freshwater Fish Marketing Corporation. The Co-operative agent gives a fish ticket to the fishermen at the time of purchase and a copy is sent to the Freshwater Fish Marketing Corporation. The Co-operative receives payment for the fish and in turn makes payment to the fishermen. The fish are weighed at point of transfer and, if accepted, a daily catch record is provided which cannot be changed. Any rejections have to be borne by the Co-operative. The Co-operative backs off charges for services and allowance for dividends to derive the lakeside price to fishermen.

Pricing of mullets. Payments for mullets are $2\frac{1}{2}$¢/lb. in contrast to 8¢/lb. for other species. (1¢/lb. for ice, packing and labor in contrast to 5¢/lb. for other species, $\frac{1}{2}$¢/lb. for other species and 1¢/lb. for boxes in contrast to 2¢/lb.). The transportation and other charges in addition to the above cost are backed off from the price to fishermen of loose fish FOB Transcona.

APPENDIX A

SIMULATION MODEL OF SOUTH INDIAN LAKE FISHERY

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APPENDIX A: FLOWCHARTS AND EQUATIONS

The computer model program contains two main sections. The first deals with the costs and revenues of South Indian Lake fishermen in the winter and summer season. The second measures the costs, revenues and profits of the co-operative plant at Leaf Rapids.

The fisherman's cost section is composed of two interrelated parts. One part deals with key factors in the fishing operation influencing the amount of the catch by species and size, measured in pounds. The second part develops the pecuniary costs of the fishing operation, some of which are related to catch factors. The factors that influence the size of the catch were isolated using regression analysis. A description of the analysis can be found in another section.[1, 2] The analysis yielded two production function relationships:

$$\text{AVE} = -2.3363 + 1.9804\ \text{MOTSIZ} + 122.2176\ \text{NETLIF} + 10.7995\ \text{NETS} + 75.8709\ (\text{PART} + \text{HIRED}) \quad (1)$$

$$\text{AVE} = -645.346 + 2075.111\ \text{NETLIF} + 25.954\ \text{NETS} \quad (2)$$

where:

AVE = Average daily catch

MOTSIZ = motor size

NETLIF = ratio of the number of days nets were lifted to the number of possible days nets could have been lifted.

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[1] D. Topolinsky, economist, and K. Weagle, biologist, of the Freshwater Institute, Environment Canada, provided much of the data used in the analysis. The information was collected in surveys.

[2] See APPENDIX B.

NETS = No. of nets used

PART = No. of partners

HIRED = No. of hired men.

Relationship number (1) holds for the summer season and relationship number (2) holds for the winter season. The seasonal catch (HARVES) is determined by multiplying AVE times the number of days actually fished (KDAYS). Hence an estimate of total production for each sample can be achieved by summing over fishermen. Production is raised to the season quota level by applying a raising factor (NRAISE) to each fisherman's catch. By setting the indicator NDUM to 1 a common raising factor is applied to each fisherman within each season. Different raising factors (NLIKE (JA)) can be used for each fisherman within each season by setting NDUM to 0. However, in our analysis the same raising factor was applied to each fishermen within seasons.

The main costs to the fisherman are:

1. Capital equipment costs (CECOST)
2. Fuel costs (FUCOST)
3. Food costs (FUCOST)
4. Wage costs (LACOST)
5. License costs (LICENS)
6. Repairs and Maintenance (REPMAI)
7. Pre-season preparation costs (PRECOS)

Capital equipment includes the boat, engine motor, nets, buoys, anchors, net lifters and net trays. The annual depreciation for capital equipment (DEPREC) is determined by dividing the cost of the equipment by the years of its expected life (EXLIFE). This figure is incremented by multiplying times one plus the average rate of return (AVRARE) for alternate investment to give an annual capital cost (ANCACO) that includes a measure for opportunity costs.

$$\mathrm{DEPREC} = \mathrm{CECOST}/\mathrm{EXLIFE} \tag{3}$$

$$\mathrm{ANCACO} = \mathrm{DEPREC}\ (1 + \mathrm{AVRARE}) \tag{4}$$

Fuel costs are gallons used per day (GALDAY) times the cost per gallon (DOLGAL). The number of gallons utilized depends on the distance between fishing locations and base camps, the frequency of lifts, and the number of gallons per mile that the engine motor requires.

The cost of travelling to and from outer lakes (OUTCOST) is computed separately.

Food costs are the cost of meals per man-day times the number of hired men and the number of days spent fishing. Wage costs are paid to hired men, if any and are based on daily wages times the number of hired men times the number of days worked. The cost of meals per man per day (MECOSM) used was $2.67 a day. It was based on a monthly figure given as a food cost for a single man ($80). The daily figure was derived assuming 30 work-days per month. Daily wages (WAGES) are derived using a $150 a month summer rate and $300 a month winter rate.

$$\mathrm{FUCOST} = \mathrm{DOLGAL} \times \mathrm{GALDAY} \times \mathrm{KDAYS} \tag{5}$$

$$\mathrm{FUCOST} = (\mathrm{PART} \times \mathrm{MECOSM} \times \mathrm{KDAYS}) + (\mathrm{HIRED} \times \mathrm{MECOSM} \times \mathrm{KDAYS}) \tag{6}$$

$$\mathrm{FUCOST} = \mathrm{HIRED} \times \mathrm{MECOSM} \times \mathrm{KDAYS}$$

LACOST = HIRED X WAGES X KDAYS (7)

Insurance costs (INSUR), pre-season preparation costs (PRECOS) and repair and maintenance costs (REPMAI) are also used.

The total catch is proportioned by species and size for whitefish. The basis of proportionment is past catch data for non-rough fish species. The 1973 catch records are used for the breakdown of whitefish into size groups. Rough fish is assumed to be 30% of the total catch.

The proportioned catch is multiplied by the lakeside price per pound per species ($LPRICE_{ij}$) to obtain the gross income for a fishing enterprise. It was assumed the lakeside cullage was 30% of the total catch (rough and non-rough fish). Furthermore, it was regarded as occuring equally among fish species and sizes. Incrementing the catch estimates by the culling factor and multiplying by the respective prices gives a potential gross income with no culling. The various costs to the fishing enterprise are totalled to give a total cost (FISCOS). Subtracting the fishing enterprise's costs from the two types of gross income yields a net income with cullage and a potential income with no cullage for the enterprise.

The income variables are:

GIWC - Gross Income With Culling

PGINC - Potential Gross Income - No Culling

NIWC - Net Income With Culling

PNINC - Potential Net Income No Culling

The total catch size per species and size ($CATCH_{ij}$) is found by summing the individual catches. Dividing the total cost by the total catch sold to the co-operative yields the average fisherman's cost per pound ($FCOSTS_{ij}$). Lake prices per species ($LPRICE_i$) are parameters given to the system.

These are used to calculate the total gross revenues by species and lake for all fishermen ($FGREVS_{ij}$) and gross costs by species and lake for all fishermen ($TFCOSS_{ij}$).

$$FGREVS_{ij} = CATCH_{ij} \times LPRICE_i \quad (8)$$

$$TFCOSS_{ij} = CATCH_{ij} \times FCOSTS_{ij} \quad (9)$$

The gross revenues and costs are summed by species by lakes, and for both lakes and species.

$$FTGREV_j = \Sigma FGREVS_{ij} \quad (10)$$

$$FTCOST_j = \Sigma TFCOSS_{ij} \quad (11)$$

$$TGREV = \Sigma FTGREV_j \quad (12)$$

where:

$FTGREV_j$ = fisherman's total gross revenue per lake

$FTCOST_j$ = fisherman's total costs per lake

$TGREV$ = total gross revenue

The total gross revenue per pound of fish caught ($GREVP_j$) and total gross cost per pound of fish caught ($GCOSP_j$) are computed; gross evenues and costs are also divided by the number of fishermen.

$$GREVP_j = FTGREV_j/CAUGHT_j \quad (13)$$

$$GCOSP_j = FTCOST_j/CAUGHT_j \quad (14)$$

ere:

$CAUGHT_j$ = the total pounds of fish caught over all species

$$FAGREV_j = FTGREV_j/FISHER_j \quad (15)$$

$$FACOST_j = FTCOST_j/FISHER_j \quad (16)$$

where:

$FAGREV_j$ = fisherman's average gross revenues

$FACOST_j$ = fisherman's average gross costs

$FISHER_j$ = the number of fishermen

The number of fishermen is introduced as a given number, but has to be changed if the quota changes.

Gross costs are subtracted from gross revenues to yield total net revenues, which are divided by the number of fishermen and by the number of pounds of fish caught.

$$FTNREV_j = FTGREV_j - FTCOST_j \tag{17}$$

$$NREVP_j = FTNREV_j/CAUGHT_j \tag{18}$$

$$FNREVF_j = FTNREV_j/FISHER_j \tag{19}$$

where:

$FTNREV_j$ = fishermen's total net revenue

$NREVP_j$ = net revenue per pound of fish

$FNREVF_j$ = fishermen's net revenue per fisherman

Output from the first section is:

Gross revenue per fisherman by lake

Gross cost per fisherman by lake

Net revenue per fisherman by lake

Gross revenue per fisherman

Gross revenue per fisherman

Gross cost per fisherman

Net revenue per fisherman

Gross revenue per pound of fish caught

Gross cost per pound of fish caught

Net revenue per pound of fish caught

The cooperative plant section is intended to measure the profit and costs in operating the Leaf Rapids plant. It can be handled by season and for the entire year. The costs to the plant operations are:

1. the transportation costs from the lakeside collection points to the plant itself (TRCOSC) measured now as a given cost per pound (TRCOCP) times the number of pounds delivered (TDELIC);

2. the transportation costs from the plant to Transcona (TRCOSM) measured now as a given cost per pound (TRCOMP) times the number of pounds delivered (TDELIM);

3. annual capital costs (ACC), office overhead costs (OOC), minimum operation costs (MOC) and electricity costs (HYDRO) are prorated for each season. The factors of proportionment are 0.4363 for the winter and 0.5636 for the summer which are based on a winter season of 3.5 months and a summer season of 4.5 months;

4. the gross revenues paid to the fisherman $FTGREV_j$;

5. annual operating costs (AOC) of the cooperative are calculated using two sub-routines, one for the lakeside operations, and one for the plant itself.

Lakeside operations begin with the cost of putting up ice. The amount of ice put up (IPUTUP) depends on the ice storage capacity (ICESTO) of a particular station. A model station is used which represents a station on Southern Indian Lake. A station on another lake is assumed to have a storage capacity of a fraction of the model station (in the initial case, the fraction is one-half). The cost of putting up ice is the amount of ice put up times the price paid per ton.

COSICE = WAGICE* (IPUTUP/2,000)

where WAGICE is the price paid for one ton of ice put up.

The daily catch for all fishermen (DCATCH) is the total seasonal catch on a particular lake ($CAUGHT_j$) divided by the number of fishing days in the season (DAYSEA).

$\text{DCATCH} = \text{CAUGHT}_j/\text{DAYSEA}$.

Ice is consumed at a rate which depends on the daily catch and the ice-fish ratios (IFISRA) used by the fishermen in hauling in fish and on the freight boats or bombardiers. As ice is used, the remaining capacity for handling fish (REMCAP) is reduced. When the daily catch exceeds the handling capacity, the excess fish are treated as wasted (WASTE). When the ice supply is exhausted, the station is closed down and information to that effect is printed.

$\text{REMCAP} = 1/[\text{IFISRA}\ (1) + \text{IFISRA}\ (2)] \times \text{IPUTUP}$

The number of man-days of labour required at the lake station (MANDEL) are based on the estimated daily catch and the number of pounds that can be handled in a man-day at the lake station (LBPMD). Handling means, the weighing, sorting and recording of catches.

$\text{MANDEL} = \text{MANDEL} + (\text{DCATCH}/\text{LBPMD})$

Dividing the man-days of labour required by the number of working days in the season yields the number of men required at the particular lake station.[3] Labour costs (LABCOS) are determined knowing the monthly wages and the length of the season.

$\text{LAKEMP} = \text{MANDEL}/\text{DAYSEA}$

$\text{LABCOS} = \text{LAKEMP} \times \text{WAGLAK}$

Annual depreciation and interest costs of capital equipment are calculated using the identical method for those of the fishermen.

The operations at the plant at Leaf Rapids is contained in a separate subroutine. The daily catch that arrives at the plant (DAYCAT) is reduced by the amount of daily cullage (DAICUL). The model has the ability to introduce a variety of processing activities and calculate the labour requirement and labour costs but this has not been utilized at this time.

---

[3] The number of men required is rounded up to an integer.

The subroutine estimates the expected number of boxes to be constructed on a daily basis. Using an anticipated daily catch (CATVOL) the number of boxes needed by the fishermen, for the freight boats and bombardiers and for shipment to Transcona is estimated. The boxes sent to Transcona are not returned, while the others are used until damaged. The new boxes that must be built daily are estimated as follows:

BOXNED = (CATVOL/LBBOXF) + (CATVOL/LBBOXL)

NBOXFB = BOXNED X BOXLOS

BOXUSE = TPACK/LBBOXT

NBOXDA = NBOXFB + BOXUSE

where:

BOXNED - Boxes needed for daily Lakeside operation

CATVOL - anticipated daily catch

LBBOXF - lb. of fish packed in a box used by fishermen

LBBOXL - lb. of fish packed in a box used in shipment to Leaf Rapids

NBOXFB - New boxes needed by fishermen and on boat and bombardier

BOXUSE - new boxes needed for shipping fish to Transcona

BOXLOS - % loss on a daily basis in boxes through usage

LBBOXT - lb. per box shipped to Transcona

The number of boxes used (BOXUSE) will differ when processing takes place and there is a loss in weight of the fish packed. To take this possibility into consideration, it is possible to introduce an adjustment mechanism through which a stock of boxes accumulates until the daily replacement requirement by fishermen and on the boat or bombardier is reached. When that is reached, box production is reduced. Box production can be increased as well.

The number of man-hours (MANOUR) needed to build boxes and pack fish on a daily basis is estimated.[4] These are divided by 8 to estimate the number of men required at the plant to pack and build boxes. The cost of their labour is estimated.

```
MANOUR (1) = NBOXDA/BOXBLT
MANOUR (2) = TPACK/LBPACM
MEN = (MANOUR (1) + MANOUR (2))/8
SALARY (2) = SALARY (2) + (MEN* WAGPAI)
```

MANOUR - man-hours required

NBOXDA - new boxes built daily

BOXBLT - boxes built per man-hour

TPACK - total lb. of fish packed

LBPACM - lb. packed per man-hour

SALARY (2) total labour costs for packing and box-building

WAGPAI - monthly wages paid to plant employees

The plant also produces ice to be used with the fish shipped to Transcona. The amount of ice needed (ICENED) depends on the ice-fish ratio (ICEFIS) used. If the amount of ice required exceeds the amount produced daily by an ice machine, then the program will indicate a new machine is needed and add its cost to the cost of capital equipment.

---

[4] The number of men required is rounded up to an integer.

Annual depreciation and interest payments are calculated in a similar way as before.

Cullage of fish is estimated as various percentages of the fish caught. Cullage is subtracted at the lakeside station, the Leaf Rapids plant and at Transcona.

The revenues to the plant operations are revenues paid for the fish that are not culled (TGCREV) which are determined thus,

$$\text{TGCREV} = \Sigma\text{NOCUL2}_i \text{ X MPRICE}$$

where:

NOCUL2_i = pounds of fish purchased by the Freshwater Marketing Corporation by species.

MPRICE_i = the initial market prices of each species.

To determine the average costs, revenues, and profits per pound, the total pounds of fish purchased by the Marketing Corporation (TNOCUL) is used. Average profit per pound is revenues per pound minus total costs per pound. Average profit per pound times the number of pounds sold yields total profit.

$$\text{COPROF} = (\text{TGCREV}/\text{TNOCUL}) - (\text{AOC} + \text{ACC} + \text{TRCOSC} + \text{TROCOSM} + \text{MOC} + \text{TGREV})/\text{TNOCUL})$$

where:

$$\text{TNOCUL} = \Sigma\text{NOCUL2}_i$$

$$\text{COPROF} = \text{COPROF} * \text{TNOCUL}$$

where:

COPROF = total profit

The output from this section will be:

1. total operating costs in two parts--a constant minimum operating cost and a variable portion dependent on volume of catch;

2. average operating costs per pound sold (also in parts)
3. total capital costs
4. average capital costs per pound sold
5. total co-operative profits
6. average co-operative profits per pound sold
7. number of employees at plant
8. employee income

VARIABLES

CATCH - CATCH of fish by species and by lake
TCATCH - Total CATCH of fish by species
CAUGHT - fish CAUGHT by lake
LPRICE - Lake PRICE by species
FCOSTS - Fisherman's per lb. COSTs per lake and species
FGREVS - Fisherman's Gross REVenueS by lake and species
FNREVS - Fisherman's Net REVenueS by lake and species
TFCOSS - Total Fisherman's COSt per lake and species
FTCOST - Fisherman's Total COST per lake
FACOST - Fisherman's Average COST per lake
FACOSS - Fisherman's Average COST per lake Summer
FACOSW - Fisherman's Average COST per lake Winter
GCOSP - Gross COSt per Pound per lake
GCOSPW - Gross COSt per Pound per lake Winter
GCOSPS - Gross COST per Pound per lake Summer
TCOST - Total COST of fishing
TCOSTW - Total COST of fishing Winter
TCOSTS - Total COST of fishing Summer
ATCOST - Average Total COST per fisherman
ATCOSW - Average Total COSt per fisherman Winter
ATCOSS - Average Total COSt per fisherman Summer
FTCOSS - Fisherman's Total COSt per lake Summer
FTCOSW - Fisherman's Total COSt per lake Winter
TGCOSP - Total Gross COSt per Pound
TGCSPW - Total Gross COSt per Pound Winter
TGCSPS - Total Gross COSt per Pound Summer
FTGREV - Fisherman's Total Gross REVenue per lake
FTGREW - Fisherman's Total Gross REVenue per lake Winter
FTGRES - Fishermen's Total Gross REVenue per lake Summer
FNREVF - Fishermen's Net REVenue per Fisherman per lake
FNREFW - Fishermen's Net REVenue per Fisherman per lake Winter
FNREFS - Fishermen's Net REVenue per Fisherman per lake Summer

FTNREV - Fishermen's Total Net REVenue per lake
FTNREW - Fishermen's Total Net REvenue per lake - Winter
FTNRES - Fishermen's Total Net REvenue per lake - Summer
GREVP - fishermen's Gross REVenue per Pound per lake
GREVPW - fishermen's Gross REVenue per Pound per lake - Winter
GREVPS - fishermen's Gross REVenue per Pound per lake - Summer
FAGREV - Fishermen's Average Gross REVenue per fisherman per lake
FAGREW - Fishermen's Average Gross REvenue per fisherman per lake - Winter
FAGRES - Fishermen's Average Gross REvenue per fisherman per lake - Summer
NREVP - fishermen's Net REVenue per Pound per lake
NREVPS - fishermen's Net REVenue per Pound per lake - Summer
NREVPW - fishermen's Net REVenue per Pound per lake - Winter
TGREV - fisherman's Total Gross REVenue
TGREVW - fisherman's Total Gross REVenue - Winter
TGREVS - fisherman's Total Gross REVenue - Summer
AGREVF - Average Gross REVenue per Fisherman
AGREFW - Average Gross REvenue per Fisherman - Winter
AGREFS - Average Gross REvenue per Fisherman - Summer
TGREVP - Total Gross REVenue per Pound
TGREPW - Total Gross REvenue per Pound - Winter
TGREPS - Total Gross REvenue per Pound - Summer
TNREV - fishermen's Total Net REVenue
TNREVW - fishermen's Total Net REVenue - Winter
TNREVS - fishermen's Total Net REVenue - Summer
ANREVF - Average Net REVenue per Fisherman
ANREFS - Average Net REvenue per Fisherman - Summer
ANREFW - Average Net REvenue per Fisherman - Winter
TNREVP - Total Net REVenue per Pound
TNREPW - Total Net REvenue per Pound - Winter
TNREPS - Total Net REvenue per Pound - Summer
FISHER - FISHERman per lake
TFISH - Total No. of FISHermen
TFISW - Total No. of FIShermen - Winter
TFISS - Total No. of FIShermen - Summer
TDELIC - Total DELIvered to Co-op (Lakeside)
TDELIM - Total DELIvered to Co-op (Leaf rapids)
TDELCW - Total DELivered to Co-op - Winter
TDELCS - Total DELivered to Co-op - Summer
NOCUL1 - No. of NOn-CULled fish at leaf rapids
NOCUL2 - No. of NOn-CULled fish at transcona
CULLED - fish CULLed at Co-op
CULLMA - fish CULLed at MArketing Corp.
CULLCW - fish CULLed at Co-op - Winter
CULLCS - fish CULLed at Co-op - Summer
CULLMS - fish CULLed at Marketing corp. - Summer
CULLMW - fish CULLed at Marketing corp. - Winter
TNOCUL - Total number NOn-CULled fish at transcona
TNOCUW - Total number NOn-CULled fish at transcona - Winter
TNOCUS - Total number NOn-CULled fish at transcona - Summer

TRCOCP - TRansportation COst to Co-op per Pound bought
TRCOSC - TRansportation COSt to Co-op
TRCOMP - TRansportation COSt to Marketing corp. per Pound bought
TRCOSM - TRansportation COSt to Marketing corp.
TRCOCW - TRansportation COst to Co-op - Winter
TRCOCS - TRansportation COst to Co-op - Summer
TRCOMW - TRansportation COst to Marketing corp. - Winter
TRCOMS - TRansportation COst to Marketing corp. - Summer
TCPPCT - Transportation Cost Per Pound (sold) to Co-op. - Total
TCPPCW - Transportation Cost Per Pound (Sold), to Co-op. - Winter
TCPPCS - Transportation Cost Per Pound (sold), to Co-op. - Summer
TCPPMT - Transportation Cost Per Pound (sold), to Marketing corp. - Total
TCPPMW - Transportation Cost Per Pound (sold) to Marketing corp. - Winter
TCPPMS - Transportation Cost Per Pound (sold) to Marketing corp. - Summer
ACC - Annual Capital Costs
ACCW - Annual Capital Costs - Winter
ACCS - Annual Capital Costs - Summer
AOC - Annual Operating Costs
AOCW - Annual Operating Costs - Winter
AOCS - Anuual Operating Costs - Summer
VIC - Volume Increment Costs
VICW - Volume Increment Costs - Winter
VICS - Volume Increment Costs - Summer
AVIC - Average Volume Increment Costs
AVICW - Average Volume Increment Costs - Winter
AVICS - Average Volume Increment Costs - Summer
NAVIC - Nominal Average Volume Increment Costs (without culling)
NAVICW - Nominal Average Volume Increment Costs - Winter (without culling)
NAVICS - Nominal Average Volume Increment Cost - Summer (without culling)
TVC - Total Variable Costs
TVCW - Total Variable Costs - Winter
TVCS - Total Variable Costs - Summer
ATVC - Average Total Variable Cost per pound sold
ATVCW - Average Total Variable Cost - Winter
ATVCS - Average Total Variable Cost - Summer
NATVC - Nominal Average Total Variable Cost per pound bought
NATVCW - Nominal Average Total Variable Cost - Winter per pound bought
NATVCS - Nominal Average Total Variable Cost - Summer per pound bought
MOC - Minimum Operating Costs
MOCW - Minimum Operating Costs - Winter
MOCS - Minimum Operating Costs - Summer
AMOC - Average Minimum Operating Costs per pound sold
AMOCW - Average Minimum Operating Costs - Winter
AMOCS - Average Minimum Operating Costs - Summer

NAMOC - Nominal Average Minimum Operating Costs per lb. sold
NAMOCW - Nominal Average Minimum Operating Costs - Winter
NAMOCS - Nominal Average Minimum Operating Costs - Summer
AACC - Average Annual Capital Costs per pound sold
AACCW - Average Annual Capital Costs per pound sold - Winter
AACCS - Average Annual Capital Costs per pound sold - Summer
NAACC - Average Annual Capital Costs per pound bought
NAACCW - Average Annual Capital Costs per pound bought - Winter
NAACCS - Average Annual Capital Costs per pound bought - Summer
TFC - Total Fixed Costs
TFCW - Total Fixed Costs - Winter
TFCS - Total Fixed Costs - Summer
ATFC - Average Fixed Costs per pound sold
ATFCW - Average Fixed Costs per pound - Winter
NATFC - Average Total Fixed Costs per pound bought
NATFCW - Average Total Fixed Costs per pound bought - Winter
NATFCS - Average Total Fixed Costs per pound bought - Summer
TCT - Total Costs Total
TCW - Total Costs - Winter
TCS - Total Costs - Summer
ATCT - Average Total Costs per pound sold
ATCW - Average Total Costs per pound sold - Winter
ATCS - Average Total Costs per pound sold - Summer
ATCPT - Average Total Costs per pound bought
ATCPW - Average Total Costs per pound bought - Winter
ATCPS - Average Total Costs per pound bought - Summer
MPRICE - Market PRICE paid to co-op by species
GCOREV - Gross Co-op REVenue by species
TGCREV - Total Gross Co-op REVenue
TGCREW - Total Gross Co-op REvenue - Winter
TGCRES - Total Gross Co-op REvenue - Summer
AGCREV - Average Gross Co-op REVenue
AGCREW - Average Gross Co-op REvenue - Winter
AGCRES - Average Gross Co-op REvenue - Summer
COPROF - Co-op PROFits per pound sold
COPROW - Co-op PROfits per pound sold - Winter
COPROS - Co-op PROfits per pound sold - Summer
TCPROF - Total Co-op PROFits
TCPROW - Total Co-op PROfits - Winter
TCPROS - Total Co-op PROfits - Summer
NCOPRF - Co-op PRoFits per pound bought
NCOPRW - Co-op PRofits per pound bought - Winter
NCOPRS - Co-op PRofits per pound bought - Summer
LOWS - Length Of Winter Season
LOSS - Length Of Summer Season
MOTSIZ - Motor Size of boat
NETS - No. of NETS used
DAYS - time spent at a particular fish camp
KDAYS - No. of DAYS fished
TKDAYS - Total No. of DAYS fished
NETLIF - times NET LIFted per day

DIST - average DISTance from location fished to base camp
TDIST - Total DISTance travelled through the season
FUCOST - FUel COST
DOLGAL - DOLlar per GALlon
MECOSM - MEal COSt per Man per day
HIRED - No. of HIRED men
LICENS - LICENSe cost
LACOST - LAbour COSTS fishermen
WAGES - daily WAGES paid by fishermen
REPMAI - REpair and Maintenance expenses
PRECOS - PRE season COSts paid by fishermen
PROCAT - PROportion of CATch by species
OUTCOST - OUTer lake COST (travel to and from)
FOCOST - FOod COSTs for fishermen
INSUR - INSURance paid by fishermen
IFISCO - Individual FIShermen's COst
OTH - OTHer Costs
AVE - AVErage daily catch per fisherman
GIWC - Gross Income With Culling
PGINC - Potential Gross Income - No Culling
NIWC - Net Income With Culling
PNINC - Potential Net Income No Culling
GALDAY - GALlons used per DAY
FISCOS - Fishermen's COSt
HARVES - HARVESt of fish for season for a fisherman
CECOST - enterprise capital Equipment COST
EXLIFE - Expected LIFE of equipment cost
AVRARE - AVerage RAte of REturn
ANCACO - Annual CApital COst
DEPREC - annual DEPRECiation
INTRE - annual INTEREst
VALUE - VALUE of first type of capital equipment
MANNED - MAN days NEeDed at plant for processing
LABREQ - LAbour REQuirements at plant for processing
LBPACK - LB. PACKed at a particular stage of processing
LBBOXF - LB. per BOX used by fisherman
LBBOXL - LB. per BOX shipped from lake station to Leaf rapids
LBBOXT - LB. per BOX shipped to Transcona
NBOXFB - New BOXes needed by Fishermen and on freight Boat
NBOXTR - New Boxes needed to ship to Transcona
NBOXDA - New BOXes needed DAily
MANOUR - MAN-hOURS needed for packing or box-building
CULLS - fish CULLed at plant
PLADAY - No. of days plant operating
PROCAP - PROcessing CAPacity
EXCFIS - EXCess FISh
COINTR - Co-op INTERest (payable on capital equipment)
PERLOS - PERcent LOSs in weight after processing
SALARY - SALARY paid to plant employees
WAGPAI - WAGes PAId on monthly basis
BOXNED - BOXes NeEDed

CATVOL - CATch VOLume desired daily
BOXLOS - BOXes LOSt (consumed) rate per day
ADJUST - ADJUSTment factor
TPACK - Total lb. of fish PACKed
BOXUSE - BOxes USEd
EXBOX - Extra BOXes
STOCK - STOCK of boxes stored at plant
ICEFIS - ICE FISh ratio in boxes shipped to transcona
ICECAP - ICE CAPacity of ice machine
ICEMAC - ICE MAChine
CODEPR - Co-op DEPReciation of plant's capital equipment
LBPMD - LB. handled per Man-Day
LABCOS - LABour COSts at lakeside station
ICESTO - ICE STOrage capacity at lakeside station
MDICE - Man-Days required to put up ICE
IPUTUP - ICE PUT up
MELAK - MEals on LAKe
IFISRA - Ice FISh RAtio
MECOLA - MEals COst LAkeside
INTLAK - INTerest payable on lakeside capital
ICEPUT - ICE PUT up in one man-day
DCATCH - Daily CATCH for all fishermen
REMCAP - REMaining fish storage CAPacity
DAYSEA - DAYs in SEAson
LAKEMP - LAKeside station employees
CULLA - CULlage at LAkeside
MANDEL - MAN Days at Lakeside
LAKMEN - LAKe station MEN needed
COSICE - COSt of putting up ICE
DEPLAK - DEPreciation of LAKeside station capital
WAGLAK - WAGes paid at LAKeside station
WAGICE - WAGes paid for putting up ICE
BOXBLT - box built per man-hour
NRAISE - raising factor for all fishermen per season
NDUM - indicator for common raising factor
NLIKE - individual raising factor for each fishermen per season
SCULL - Sum of CULlage at Lakeside
CULS - CULlage at lakeside - Summer
CULW - CULlage at lakeside - Winter
TEARN - Total EARNings by co-op employees
TNE - Total Number of co-op Employees
XPLANT - indicator for existence of the leaf rapids plant

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      $JOB    WATFIV    CRAVEN
  1            REAL*8 A,B,C,D,E,F,G,H,O,P,Q,R,S,T,U,V,X,Y,Z
  2            REAL*8 CATCH(9,4),TCATCH(9),LPRICE(9),FCOSTS(9,4),FGREVS(9,4),
              1FNREVS(9,4),TFCOSS(9,4),FTCOST(4),FTGREV(4),FNREVF(4),TNREV,ANREVF
              2,FISHER(4),NATFC,TDELIC,TNOCUL,NOCUL1(9),ADC,TRCOCP,TRCOSC,ACC,
              3TRCOMP,TRCOSM,NOCUL2(9),MPRICE(9),COREV(9),TCCREV,COPROF,COPROW
              4/0.D0/,COPROS/0.D0/,TPFLIM,FTNREV(4)/4*0.D0/,TGREV,ACCW,ADCW,ACCS,
              5ADCS,ATCPT,CULLCW,CULLCS,CULLMW,CULLMS,TFISW,TFISS
  3            REAL*8 ANREFS/0.D0/,ANREFW/0.D0/,TCCREW/0.D0/,TCCRES/0.D0/,TNOCUW
              1/0.D0/,TNOCUS/0.D0/,TRCOCW/0.D0/,TRCOCS/0.D0/,TRCOMW/0.D0/,TRCOMS
              2/0.D0/,TGREVW/0.D0/,TGREVS/0.D0/,FNREFW(4)/4*0.D0/,
              3FNREFS(4)/4*0.D0/,TFISH,TCUST,TCOSTW/0.D0/,TCOSTS/0.D0/,
              4  TNREVW/0.D0/,TNREVS/0.D0/,ATCOSW/0.D0/,ATCOSS/0.D0/,AGREFW/0.D0/
              5,AGREFS/0.D0/,TDELCW,TDELCS,TGREPW/0.D0/,TGREPS/0.D0/,TGCSPW/0.D0/
  4            REAL*8 VICW,VICS,VIC,TCPROW,TCPROS,TCPROF,AVICW,AVICS,AVIC,NAVICW,
              1NAVICS,NAVIC,TCPPCW,TCPPCS,TCPPCT,TCPPMT,TVCW,TVCS,ATVCW,ATVCS,
              2ATVC,TVC,NATVC,NATVCW,NATVCS,NAMOCW,NAMOCS,NAMOC,AACCW,AACCS,AACC,
              3NAACCW,NAACCS,NAACC,TFCW,TFCS,TFC,ATFCW,ATFCS,ATFC,NATFCW,NATFCS,
              4AGCREW,AGCRES,AGCREV,AGREPW,AGREPS,AGREVP,TCPPMS,TCPPMW,ATCOST
  5            REAL*8 LOWS,LOSS,FAGREV(4),FACOST(4),FAGREW(4)/4*0.D0/,FAGRES(4)/4
              1*0.D0/,CAUGHT(4),QUOTA(9,4),GREVP(4),GCOSP(4),NREVP(4),TGCOSP,
              2GREVPW(4)/4*0.D0/,GREVPS(4)/4*0.D0/,GCOSPW(4)/4*0.D0/,GCOSPS(4)/4*
              30.D0/,NREVPW(4)/4*0.D0/,NREVPS(4)/4*0.D0/,MOCW/0.D0/,AMOCW/0.D0/,
              4MOCS/0.D0/,AMOCS/0.D0/,MOC /0.D0/,AMOC /0.D0/,FACOSW(4),FACOSS(4)
  6            REAL*8 FTGREW(4)/4*0.D0/,FTGRES(4)/4*0.D0/,FTCOSS(4)/4*0.D0/,
              1 FTCOSW(4)/4*0.D0/,FTNREW(4)/4*0.D0/,FTNRES(4)/4*0.D0/
  7            REAL*8 TGCSPS/0.D0/,TNREPW/0.D0/,TNREPS/0.D0/,ATCT,ATCPW,ATCPS
  8            REAL*8 NCOPRW,NCOPRS,NCOPRF,CULLCO,CULLMA,TCW,TCS,TCT,ATCW,ATCS
  9            LOGICAL*1 LINE(132)/132*'-'/
 10            REAL*8 CECOST(10),EXLIFE(10),AVRARE,ANCACO,DEPREC,INTRE,VALUE
 11            REAL*8 AA,AB,AC,AD,AE
 12            REAL NMEN
 13            DIMENSION NLIKE(120)
 14            REAL MISC
 15            REAL MAN,MANS,MANW
 16            REAL NETS,NETLIF,HIRED,DIST(5),DAYS(5),INSUR,IFISCO(50),KDAYS,
              1 HARVES(50),TEST(9),GINC(50),NINC(50),PNINC(50),PGINC(50),
              2PROCAT(9),MECOSM,LICENS,MCTSIZ,LACOST
 17            REAL MANDEL,LBPMD,LAKMEN,LAKEMP,LABCOS,ICESTO,IPUTUP,IFISRA(2),
              1INTLAK
 18            COMMON/AREA1/ LBPMD,LABCOS,ICESTO,IPUTUP,IFISRA,INTLAK,NANCY,
              1 DCATCH,REMCAP,DAYSEA,LAKEMP,CULLA,MANDEL,LAKMEN,COSICE,JANE,WASTE
              2,DEPLAK,WAGLAK,WAGICE
 19            REAL MANDEC,LABREQ(6),NBOXTR,LBBOXF,LBBOXL,LBBOXT,NBOXFR,NBOXDA,
              1HYDRO,MANDUR(2),LBPACK(6),LBPACM,ICEFIS,ICECAP
 20            COMMON/AREA2/DAYCAT,MANNEC,LABREQ,LBPACK,LBBOXF,LBBOXL,LBBOXT,
              1NBOXFR,NBOXTR,NBOXDA,MANDUP,CULLS,PLADAY,PROCAP(6),EXCFIS,
              2COINTR,PERLOS(6),SALARY(2),WAGPAI,BOXNED,CATVOL,BOXLOS,ADJUST,
              3TPACK,BOXUSE,EXBOX,STOCK,ICEFIS,ICECAP,ICEMAC,NORMAN,CODEPR,LBPACM
              4,BOXBLT,MAN
 21            REAL MACH
 22            COMMON MACH
 23            COMMON/DSAFE/CLAND
 24            REAL FRINGE(4),LAKUEB,LAKCRE,HYDROW,HYDROS
 25            REAL LAKEMW,LABCOW,MECOW,INTLAW,LAKEMS,LACOSS,MECOS,INTLAS,MECOST
 26            REAL SALARW(2),SALARS(2)
 27            MACH=0.
 28            COSC1=0.
 29            COSC2=0.
 30            QUOTA(1,1)=3.6D5
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   31          QUOTA(2,1)=4.0D4
   32          QUOTA(3,1)=7.2D5
   33          QUOTA(4,1)=8.0D4
   34          NMEN=0
   35          LOWS=3.5D0
   36          LOSS=4.5D0
   37          READ,HYDPU,DOC,AFS
         C ASSUMPTION DESCRIPTION
   38          READ 150,A,B,C,D,E,F,G,H,O
   39      150 FORMAT(9A8)
         C TRANSPORTATION MODE WINTER
   40          READ 152, P,Q,R,S,T
   41      152 FORMAT(5A8)
         C TRANSPORTATION MODE SUMMER
   42          READ 154,U,V,X,Y,Z
   43      154 FORMAT(5A8)
   44          DO 24 N=1,2
   45          DO 99 I=1,9
   46       99 TCATCH(I)=0.D0
   47          DO 98 J=1,4
   48          FTGREV(J)=0.D0
   49          FTCOST(J)=0.D0
   50          FCOSTS(1,J)=0.D0
   51       98 CAUGHT(J)=0.D0
   52          TGCPEV = 0.D0
   53          TDELIC = 0.D0
   54          SCULL=0.
   55          TNOCUL = 0.D0
   56          TDELIM = 0.D0
   57          TCOST = 0.D0
   58          TGREV = 0.D0
   59          THREV = 0.D0
   60          TFISH=0.D0
   61          DCATCH=0.
   62          READ,TFCOCP,TRCOMP
   63          READ,(LPRICE(I),I=1,9),(FISHER(J),J=1,4),(MPRICE(I),I=1,9)
   64          DO 40 J=1,4
   65          IF(FISHER(J).EQ.0.D0) GO TO 2000
         C MECOSM AND WAGES ARE DAILY RATES DETERMINED FROM MONTHLU RATES DIVIDED
         C BY 20 WORKING DAYS PER MONTH
   66          READ,DELGAL,MECOSM,WAGES,LICENS,(PROCAT(IA),IA=1,9)
   67          READ,DAYSEA,LHPMO,LAKEMP,ICESTC,WAGICE,(IFISRA(K),K=1,2),WAGLAK
   68          GO TO 1701
   69     1700 CONTINUE
   70          IF(SUMMAR.EQ.0.) GO TO 1972
   71          PRINT 226,AD,AE
   72      226 FORMAT('1',43X,'TABLE 4 SUMMARY FISHING ENTERPRISE TYPE',1X,2A8///
              -)
   73          PRINT 201,AC
   74          PRINT 202
   75          PRINT 203,AA,AB,SVALUE/TOM
*EXTENSION*  OTHER COMPILERS MAY NOT ALLOW EXPRESSIONS IN OUTPUT LISTS
   76          PRINT 204,SUMNET/TOM,SUMNET*100./TOM,TCATCH(1),TCATCH(1)/TOM
*EXTENSION*  OTHER COMPILERS MAY NOT ALLOW EXPRESSIONS IN OUTPUT LISTS
*EXTENSION*  OTHER COMPILERS MAY NOT ALLOW EXPRESSIONS IN OUTPUT LISTS
*EXTENSION*  OTHER COMPILERS MAY NOT ALLOW EXPRESSIONS IN OUTPUT LISTS
   77          PRINT 205,TCATCH(2),TCATCH(2)/TOM
*EXTENSION*  OTHER COMPILERS MAY NOT ALLOW EXPRESSIONS IN OUTPUT LISTS
   78          PRINT 206,TCATCH(3),TCATCH(3)/TOM
*EXTENSION*  OTHER COMPILERS MAY NOT ALLOW EXPRESSIONS IN OUTPUT LISTS
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      79            SUMLIF=SUMLIF/TKDAYS
      80            PRINT 207,SUMLIF,SUMDAY/TOM,TCATCH(4),TCATCH(4)/TOM
 *EXTENSION*  OTHER COMPILERS MAY NOT ALLOW EXPRESSIONS IN OUTPUT LISTS
 *EXTENSION*  OTHER COMPILERS MAY NOT ALLOW EXPRESSIONS IN OUTPUT LISTS
      81            TOTAL     =TCATCH(1)+TCATCH(2)+TCATCH(3)+TCATCH(4)
      82            PRINT 209,SUMDIS/TOM,TOTAL,TOTAL/TOM
 *EXTENSION*  OTHER COMPILERS MAY NOT ALLOW EXPRESSIONS IN OUTPUT LISTS
 *EXTENSION*  OTHER COMPILERS MAY NOT ALLOW EXPRESSIONS IN OUTPUT LISTS
      83            PRINT 210,TCATCH(5),TCATCH(5)/TOM
 *EXTENSION*  OTHER COMPILERS MAY NOT ALLOW EXPRESSIONS IN OUTPUT LISTS
      84            PRINT 211,TCATCH(6),TCATCH(6)/TOM
 *EXTENSION*  OTHER COMPILERS MAY NOT ALLOW EXPRESSIONS IN OUTPUT LISTS
      85            PRINT 212,SUMINT/TOM,TCATCH(7),TCATCH(7)/TOM
 *EXTENSION*  OTHER COMPILERS MAY NOT ALLOW EXPRESSIONS IN OUTPUT LISTS
 *EXTENSION*  OTHER COMPILERS MAY NOT ALLOW EXPRESSIONS IN OUTPUT LISTS
      86            PRINT 213,SUMDEP/TOM,SUMHAR,SUMHAR/TOM
 *EXTENSION*  OTHER COMPILERS MAY NOT ALLOW EXPRESSIONS IN OUTPUT LISTS
 *EXTENSION*  OTHER COMPILERS MAY NOT ALLOW EXPRESSIONS IN OUTPUT LISTS
      87            PRINT 214,SUMREM/TOM
 *EXTENSION*  OTHER COMPILERS MAY NOT ALLOW EXPRESSIONS IN OUTPUT LISTS
      88            PRINT 215,SUMFUC/TOM
 *EXTENSION*  OTHER COMPILERS MAY NOT ALLOW EXPRESSIONS IN OUTPUT LISTS
      89            PRINT 216,SUMLAC/TOM
 *EXTENSION*  OTHER COMPILERS MAY NOT ALLOW EXPRESSIONS IN OUTPUT LISTS
      90            PRINT 217,SUMFOC/TOM,SUMCUL/TOM
 *EXTENSION*  OTHER COMPILERS MAY NOT ALLOW EXPRESSIONS IN OUTPUT LISTS
 *EXTENSION*  OTHER COMPILERS MAY NOT ALLOW EXPRESSIONS IN OUTPUT LISTS
      91            PRINT 218,SUMOUT/TOM
 *EXTENSION*  OTHER COMPILERS MAY NOT ALLOW EXPRESSIONS IN OUTPUT LISTS
      92            PRINT 219,SUMLIC/TOM,SPGINC
 *EXTENSION*  OTHER COMPILERS MAY NOT ALLOW EXPRESSIONS IN OUTPUT LISTS
      93            PRINT 220,SUMOTH/TOM
 *EXTENSION*  OTHER COMPILERS MAY NOT ALLOW EXPRESSIONS IN OUTPUT LISTS
      94            PRINT 221,SFISCO/TOM,SUGINC
 *EXTENSION*  OTHER COMPILERS MAY NOT ALLOW EXPRESSIONS IN OUTPUT LISTS
      95            PRINT 222,SNINC
      96            PRINT 224,SPNINC
      97            SNINC=SNINC/TACK
      98            SPNINC=SPNINC/TACK
      99            SPGINC=SPGINC/TACK
     100            SUGINC=SUGINC/TACK
     101            PRINT 240, SUGINC
     102        240 FORMAT('0',15X,'AVERAGE GROSS INCOME WITH LAKESIDE CULLAGE PER FIS
                   1HERMAN',2X,F10.2)
     103            PRINT 241,SPGINC
     104        241 FORMAT(' ',3X,'POTENTIAL AVERAGE GROSS INCOME WITH LAKESIDE CULLAG
                   1E PER FISHERMAN',2X,F10.2)
     105            PRINT 242,SNINC
     106        242 FORMAT(' ',15X,'AVERAGE NET   INCOME WITH LAKESIDE CULLAGE PER FIS
                   1HERMAN',2X,F10.2)
     107            PRINT 243,SPNINC
     108        243 FORMAT(' ',5X, 'POTENTIAL AVERAGE NET   INCOME WITH LAKESIDE CULLA
                   1GE PER FISHERMAN',2X,F10.2)
     109            PRINT 244,TCM
     110        244 FORMAT('0',20X,'NUMBER OF ENTERPRISES IN GROUP',1X,F5.0)
     111            IF (NUMBE.EQ.0) GO TO 1710
     112       1701 SUMINT=0.
     113            SUMCUL=0.
     114            SUMDEP=0.
     115            TKDAYS=0.
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```
      SUMNET=0.
      SUMLIF=0.
      SUMDAY=0.
      SUMMUV=0.
      SUMDIS=0.
      SUMFUC=0.
      SUMLAC=0.
      SUMFOC=0.
      SUMREM=0.
      SUMLIC=0.
      SUMOUT=0.
      SUMINS=0.
      SUMCUL=0.
      SNIWC=0.
      SUGINC=0.
      SFISCO=0.
      SPGINC=0.
      SPNINC=0.
      SUMHAP=0.
      SVALUE=0.
      SUMOTH=0.
      TACK=0.
      TOM=0.
      DO 50  IA=1,9
   50 TEST(IA)=0.
      DTEST=0.
 1972 CONTINUE
C MAIN EQUIPMENT TYPE AND SEASON
      READ 155,AA,AB,AC
  155 FORMAT(3A8)
C OPERATION TYPE
      READ 156,NU,NUM,AD,AE
  156 FORMAT(I2,2X,I2,2X,2A8)
      DO 41 JA=NU,NUM
      GINC(JA)=0.
      PGINC(JA)=0.
      READ,NCODE
      IF(NCODE.EQ.1) GO TO 6666
      NLIKE(JA)=0.
      HARVES(JA)=0.
      IFISCO(JA)=0.
      CULLA =0.
      GO TO 41
 6666 CONTINUE
C KDAYS IS NUMBER OF DAYS ACTUALLY FISHED
      READ,MOTSIZ,NETLIF,NETS,PART,HIPED,KDAYS,GALDAY,OTH,PRECOS,OUTCOS,
     1INSUP,REPMAI,MISC,(DAYS(KA),KA=1,5),(DIST(KA),KA=1,5),NLIKE(JA)
      TOM=TOM+NLIKE(JA)
      TACK=TACK+PART*NLIKE(JA)
      IF(N.EQ.2) GO TO 2578
      AVE=-645.346+2075.11*NETLIF+25.9543*NETS
      HARVES(JA)=AVE*KDAYS
      GO TO 8752
 2578 CONTINUE
      AVE=-2.3363+1.98040*MOTSIZ+122.218*NETLIF+10.7995*NETS+
     -75.8709*(PART+HIRED)
      HARVES(JA)=AVE*KDAYS
 8752 CONTINUE
C HARVEST  INCREMENTED  TO  INCLUDE  ROUGH  FISH  AND  CULLAGE
      HARVES(JA)=(HARVES(JA)*1.4285)*1.4285
      IF(PROCAT(7).EQ.0.) GO TO 9778
C ROUGH FISH INCLUDED
      HARVES(JA)=1.0*HARVES(JA)
      GO TO 8779
C ROUGH  FISH  EXCLUDED
 9778 HARVES(JA)=0.7*HARVES(JA)
 8779 CONTINUE
      DO 43  IA=1,7
      TEST(IA)=PROCAT(IA)*HARVES(JA)
   43 PGINC(JA)=PGINC(JA)+ (TEST(IA)* LPRICE (IA))
      SPGINC=SPGINC + PGINC (JA)*NLIKE(JA)
C CULLAGE  CALCULATED
      CULLA=0.3*HARVES(JA)
      HARVES(JA)=HARVES(JA)-CULLA
      SUMHAR=SUMHAR + HARVES(JA)*NLIKE(JA)
      DO 42  IA=1,7
      TEST(IA)=PROCAT(IA)*HARVES(JA)
   42 GIWC(JA)=GIWC(JA)+TEST(IA)*LPRICE(IA)
      SUGIWC=SUGIWC + GIWC (JA)*NLIKE(JA)
      TDIST=0.
      DO 46 JD=1,5
   46 TDIST=TDIST + DAYS(JD)*DIST(JD)*NETLIF
      LACOST=HIRED*WAGES*KDAYS
      FUCOST=DOLGAL*GALDAY*KDAYS*NETLIF
      FOCOST=HIRED*MECOSM*KDAYS
      OTH=OTH*1.05+MISC
      CALL CAPITA(CECOST,EXLIFE,AVRARE,ANCACO,DEPREC,INTRE,VALUE,N)
      FISCOS=FUCOST+LACOST+ANCACO+LICENS+REPMAI+OUTCOS+INSUR+PRECOS+OTH
     1 + FOCOST
      IFISCO(JA)=FISCOS
      NIWC(JA)=GIWC(JA)-IFISCC(JA)
      PNINC(JA)=PGINC(JA)-IFISCC(JA)
      OTH=OTH+PRECOS+INSUR
      PRINT 200,JA
  200 FORMAT('1',51X,'TABLE 3 FISHING ENTERPRISE',1X,I2)
      PRINT 201,AC
  201 FORMAT(' ',A9,'SEASON'/)
      PRINT 1099,NLIKE(JA)
 1099 FORMAT(' ','NUMBER OF LIKE ENTERPRISES',2X,I2/)
      PRINT 202
  202 FORMAT(' ',2X,'FISHING EQUIPMENT',47X,'CATCH INFORMATION')
      PRINT 203,AA,AB,VALUE
  203 FORMAT(' ',3X,2A8,F10.2,4X,'ESTIMATED MARKET VALUE',6X,'CATCH BY S
     1PECIES AND SIZE',5X,'GROUP TOTAL',5X,'GROUP AVERAGE')
      PRINT 204,NETS,NETS * 100.,TEST(1)
*EXTENSION*  OTHER COMPILERS MAY NOT ALLOW EXPRESSIONS IN OUTPUT LISTS
  204 FORMAT(' ',3X,'NO. OF NETS',2X,F4.0,2X,'TOTAL LENGTH',2X,F7.0,2X,
     1'YARDS',18X,'WHITEFISH   JUMBO',2X,F10.0,1X,'LB.',5X,F10.0,1X,
     2'LB.')
      PRINT 205,TEST(2)
  205 FORMAT(' ',80X,'LARGE',2X,F10.0,1X,'LB.',5X,F10.0,1X,'LB.')
      PRINT 206,TEST(3)
  206 FORMAT(' ',2X,'FISHING EFFORT',64X,'MEDIUM',1X,F10.0,1X,'LB.',5X,F
     110.0,1X,'LB.')
      PRINT 207,NETLIF,KDAYS,TEST(4)
  207 FORMAT(' ',3X,'NO. OF LIFT/DAYS',2X,F6.3,5X,'DAYS FISHED',F5.0,32X
     1,'SMALL',2X,F10.0,1X,'LB.',5X,F10.0,1X,'LB.')
      TDIST=TDIST/KDAYS
      TOTAL  =TEST(1)+TEST(2)+TEST(3)+TEST(4)
      PRINT 208,TDIST,TOTAL
      208 FORMAT(' ',3X,'DISTANCE TRAVELLED/DAY',2X,F7.0,2X,'MILES',36X,'SUB
         1-TOTAL',1X,F10.0,1X,'LB.',5X,F10.0,1X,'LB.')
      209 FORMAT(' ',35X,'PER SEASON',23X,'WALLEYE',12X,F10.0,1X,'LB.',5X,F1
         10.0,1X,'LB.')
          PRINT 209,TEST(5)
          PRINT 211,TEST(6)
      211 FORMAT(' ',2X,'COSTS',61X,'JACKFISH',11X,F10.0,1X,'LB.',5X,F10.0,1
         1X,'LB.')
          PRINT 212,INTEL,TEST(7)
      212 FORMAT(' ',3X,'INTEREST',10X,'$',1X,F10.2,35X,'ROUGH FISH',9X,F10.
         10,1X,'LB.',5X,F10.0,1X,'LB.')
          PRINT 213,DEPREC,HARVES(JA)
      213 FORMAT(' ',3X,'DEPRECIATION',8X,F10.2,35X,'TOTAL',14X,F10.0,1X,'LB
         1.',5X,F10.0,1X,'LB.')
          PRINT 214,REPMAI
      214 FORMAT(' ',3X,'EQUIPMENT + REPAIR',2X,F10.2)
          PRINT 215,FUCOST
      215 FORMAT(' ',3X,'FUEL COSTS',10X,F10.2)
          PRINT 216,LACOST
      216 FORMAT(' ',3X,'HIRED LABOUR',8X,F10.2)
          PRINT 217,FOCOST,CULLA
      217 FORMAT(' ',3X,'FOOD COSTS',10X,F10.2,33X,'LAKESIDE CULLAGE',5X,F10
         1.0,1X,'LB.')
          PRINT 218,CUTCOS
      218 FORMAT(' ',3X,'TRAVEL TO OUTER LAKES',3X,F6.2)
          PRINT 219,LICENS,PGINC(JA)
      219 FORMAT(' ',3X,'LICENCE',13X,F10.2,33X,'POTENTIAL GROSS INCOME WITH
         1OUT LAKESIDE CULLAGE',1X,F10.2)
          PRINT 220,OTH
      220 FORMAT(' ',3X,'OTHER',15X,F10.2)
          PRINT 221,IFISCO(JA),GIWC(JA)
      221 FORMAT(' ',3X,'TOTAL',15X,F10.2,33X,'GROSS INCOME WITH LAKESIDE CU
         1LLAGE',14X,F10.2)
          PRINT 222,NIWC(JA)
      222 FORMAT('0',30X,'NET INCOME WITH LAKESIDE CULLAGE',15X,F10.2)
          PRINT 223,NIWC(JA)/PART
*EXTENSION*  OTHER COMPILERS MAY NOT ALLOW EXPRESSIONS IN OUTPUT LISTS
      223 FORMAT(' ',30X,'NET INCOME WITH LAKESIDE CULLAGE PER PARTNER',3X,
         1F10.2)
          PRINT 224,PNINC(JA)
      224 FORMAT(' ',17X,'POTENTIAL NET INCOME WITHOUT LAKESIDE CULLAGE',15X
         1,F10.2)
          PRINT 225,PNINC(JA)/PART
*EXTENSION*  OTHER COMPILERS MAY NOT ALLOW EXPRESSIONS IN OUTPUT LISTS
      225 FORMAT(' ',17X,'POTENTIAL NET INCOME WITHOUT LAKESIDE CULLAGE PER
         1PARTNER',3X,F10.2)
          SCULL=SCULL+CULLA*NLIKE(JA)
          SUMCUL=SUMCUL+CULLA*NLIKE(JA)
          TKDAYS=TKDAYS+KDAYS*NLIKE(JA)
          SUMINT=SUMINT+INTREC*NLIKE(JA)
          SUMDEP=SUMDEP+DEPREC*NLIKE(JA)
          SUMNET=SUMNET+NETS*NLIKE(JA)
          SUMLIF=SUMLIF+(NETLIF*KDAYS)*NLIKE(JA)
          SUMDAY=SUMDAY+KDAYS*NLIKE(JA)
          SUMDIS=SUMDIS+TDIST*NLIKE(JA)
          SUMFUC=SUMFUC+FUCOST*NLIKE(JA)
          SUMFOC=SUMFOC+FOCOST*NLIKE(JA)
          SUMLAC=SUMLAC+LACOST*NLIKE(JA)
          SUMREM=SUMREM+REPMAI*NLIKE(JA)
          SUMOUT=SUMOUT+OUTCOS*NLIKE(JA)
      SUMINS=SUMINS+INSUR *NLIKE(JA)
      SPNINC=SPNINC+ENINC(JA)*NLIKE(JA)
      SNIWC=SNIWC+NIWC(JA)*NLIKE(JA)
      SFISCO=SFISCO+IFISCO(JA)*NLIKE(JA)
      SVALUE=SVALUE+VALUE*NLIKE(JA)
      SUMLIC=SUMLIC+LICENS*NLIKE(JA)
      SUMOTH=SUMOTH+OTH*NLIKE(JA)
      DO 49 IA=1,9
   49 TCATCH(IA)=TCATCH(IA)+TEST(IA)*NLIKE(JA)
   41 CONTINUE
      READ,NUMBE
      IF(NUMBE.LE.1) GO TO 1700
 1710 READ,NUMB
      DO 47 JA=1,NUMB
      CAUGHT(J)=CAUGHT(J)+HARVES(JA)*NLIKE(JA)
   47 FCOSTS(1,J)=FCOSTS(1,J)+IFISCC(JA)*NLIKE(JA)
      FCOSTS(1,J)=FCOSTS(1,J)/CAUGHT(J)
      DO 48 I=1,9
      CATCH(I,J)=PROCAT(I)*CAUGHT(J)
      IF(I.EQ.9) GO TO 4800
   48 FCOSTS(I+1,J)=FCOSTS(1,J)
 4800 CONTINUE
      DCATCH=CAUGHT(J)/DAYSEA
      DAYCAT=DCATCH
      IF(N.EQ.1) CULW=SCULL
      IF(N.EQ.2) CULS=SCULL
      CULLA=0.
      TCOSIC=0.
      TLAEMP=0.
      TDEPLA=0.
      TINTLA=0.
      TLABCC=0.
      JANE=J
      NANCY=N
      CALL LAKE
      IF(J.EQ.1) MA=3
      IF(J.NE.1) MA=1
      IF(N.EQ.1) MA=1
      DO 67 K=1,MA
      TLAEMP=TLAEMP+LAKEMP
      TLABCO=TLABCO+LABCOS
      TCOSIC=TCOSIC+COSICL
      TDEPLA=TDEPLA + DEPLAK
      TINTLA=TINTLA + INTLAK
   67 CONTINUE
      IF(N.EQ.2) GO TO 7500
      LAKEMW=TLAEMP
      LABCOW=TLABCO
      COSICW=TCOSIC
      DEPLAW=TDEPLA
      INTLAW=TINTLA
      NMEN=NMEN+LAKEMW
      GO TO 7501
 7500 CONTINUE
      LAKEMS=TLAEMP
      LACOSS=TLABCO
      COSICS=TCOSIC
      DEPLAS=TDEPLA
      INTLAS=TINTLA
      NMEN=NMEN+LAKEMS
 7501  CONTINUE
       GO TO 40
 2000  CONTINUE
       DO 80 I=1,9
       CATCH(I,J)=0.D0
    80 FCOSTS(I,J)=0.D0
    40 CONTINUE
C GROSS REVENUES AND COSTS PER FISHERMAN PER LAKE
       DO 10 J=1,4
       DO 11 I=1,9
    11 FGREVS(I,J)=CATCH(I,J)*LPRICE(I)
    10 CONTINUE
       DO 12 J=1,4
       DO 13 I=1,9
    13 TFCOSS(I,J)=CATCH(I,J)*FCOSTS(I,J)
    12 CONTINUE
       DO 16 J=1,4
       DO 17 I=1,9
       FTGREV(J)=FTGREV(J)+FGREVS(I,J)
    17 FTCOST(J)=FTCOST(J)+TFCOSS(I,J)
       IF(N.EQ.1)FTGREW(J)=FTGREV(J)
       IF(N.EQ.2)FTGRES(J)=FTGREV(J)
       IF(N.EQ.1)FTCOSW(J)=FTCOST(J)
       IF(N.EQ.2)FTCOSS(J)=FTCOST(J)
    16 CONTINUE
C NET REVENUES AND AVERAGE COSTS PER FISHERMAN PER LAKE
       DO 18 J=1,4
       FTNREV(J)=FTGREV(J)-FTCOST(J)
       IF(N.EQ.1)FTNREW(J)=FTNREV(J)
       IF(N.EQ.2)FTNRES(J)=FTNREV(J)
       IF(FISHER(J).EQ.0.D0) GO TO 1111
       FNREVF(J)=FTNREV(J)/FISHER(J)
       FAGREV(J)=FTGREV(J)/FISHER(J)
       FACOST(J)=FTCOST(J)/FISHER(J)
       IF(N.EQ.1)FNREFW(J)=FNREVF(J)
       IF(N.EQ.2)FNREFS(J)=FNREVF(J)
       IF(N.EQ.1)FAGREW(J)=FAGREV(J)
       IF(N.EQ.2)FAGRES(J)=FAGREV(J)
       IF(N.EQ.1)FACOSW(J)=FACOST(J)
       IF(N.EQ.2)FACOSS(J)=FACOST(J)
    18 CONTINUE
C GROSS REVENUES AND COSTS PER FISHERMAN
  1111 DO 19 J=1,4
       TCOST=TCOST+FTCOST(J)
       TGREV=TGREV+FTGREV(J)
       TFISH=TFISH + FISHER(J)
    19 TNREV=TNREV+FTNREV(J)
       IF(N.EQ.1)TFISW=TFISH
       IF(N.EQ.2)TFISS=TFISH
       IF(N.EQ.1)TCOSTW=TCOST
       IF(N.EQ.2)TCOSTS=TCOST
       IF(N.EQ.1) TGREVW=TGREV
       IF(N.EQ.2) TGREVS=TGREV
       IF(N.EQ.1)TNREVW=TNREV
       IF(N.EQ.2)TNREVS=TNREV
C NET REVENUES AND AVERAGE COSTS PER FISHERMAN
       ATCOST=TCOST/TFISH
       IF(N.EQ.1)ATCOSW=ATCOST
       IF(N.EQ.2)ATCOSS=ATCOST
       AGREVF=TGREV/TFISH
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      IF(N.EQ.1)AGREFW=AGREVF
      IF(N.EQ.2)AGREFS=AGREVF
      ANREVF=TNREV/TFISH
      IF(N.EQ.1)ANREFW=ANREVF
      IF(N.EQ.2)ANREFS=ANREVF
C GROSS REVENUES,GROSS COSTS, NET REVENUES, PER POUND PER LAKE
      DO 29 J=1,4
      IF(CAUGHT(J).EQ.0.D0) GO TO 29
      GREVP(J)=FTGREV(J)/CAUGHT(J)
      GCOSP(J)=FTCOST(J)/CAUGHT(J)
      NREVP(J)=FTNREV(J)/CAUGHT(J)
      IF(N.EQ.1)GREVPW(J)=GREVP(J)
      IF(N.EQ.2)GREVPS(J)=GREVP(J)
      IF(N.EQ.1) GCOSPW(J)=GCOSP(J)
      IF(N.EQ.2) GCOSPS(J)=GCOSP(J)
      IF(N.EQ.1) NREVPW(J)=NREVP(J)
      IF(N.EQ.2) NREVPS(J)=NREVP(J)
   29 CONTINUE
      DO 20 I=1,9
      TDELIC=TDELIC+TCATCH(I)
   20 CONTINUE
C GROSS REVENUES,GROSS COSTS, NET REVENUES, PER POUND
      TGREVP=TGREV/TDELIC
      TGCOSP=TCOST/TDELIC
      TNREVP=TNREV/TDELIC
      IF(N.EQ.1)TGREPW=TGREVP
      IF(N.EQ.2)TGREPS=TGREVP
      IF(N.EQ.1)TGCSPW=TGCOSP
      IF(N.EQ.2)TGCSPS=TGCOSP
      IF(N.EQ.1)TNREPW=TNREVP
      IF(N.EQ.2)TNREPS=TNREVP
C CO-OP OPERATIONS ********************************************************
      READ,PLADAY,(PROCAP(K),K=2,6),(LABREQ(K),K=2,6),WAGPAI,(PERLOS(K),
     1K=1,6),LBBOXF,LBBOXL,LBBOXT,BOXLOS,BOXBLT,LBPACM,ICEFIS,ICECAP,
     2CATVOL,COSBOX
      NORMAN=N
      IF(N.EQ.2) GO TO 7000
      DO 22 I=1,9
      NOCUL1(I)=TCATCH(I)-(4.0D-2*TCATCH(I))
      NOCUL2(I)=NOCUL1(I)-(1.0D-2*NOCUL1(I))
   22 GCOREV(I)=NOCUL2(I)*MPRICE(I)
      CULLCW=4.0D-2*TDELIC
      CULLS=CULLCW
      COSCL1=.04*TGREVW
      COSCL2=.01*TGREVW*(1.-.04)
      COSC1=COSC1+COSCL1
      COSC2=COSC2+COSCL2
      CALL PLANT
      NMEN=NMEN+MAN
      MANW=MAN
      COINTW=CCINTR
      CODEPW=CODEPR
      ACCW=COINTW+CODEPW+INTLAW+DEPLAW
      SALARY(1)=SALARY(1)*LCWS
      SALARY(2)=SALARY(2)*LCWS
      LABCOW=LABCOW*LCWS
      FRINGE(1)=0.10*SALARY(1)
      FRINGE(2)=0.10*SALARY(2)
      FRINGE(3)=0.10*LABCOW
      SALARW(1)=SALARY(1)
      SALAPW(2)=SALARY(2)
      HYDROW=HYDRO*0.4364
      AFSW=.4364*AFS
      OOCW=OOC*0.4364
      FRINGE(4)=.10*AFSW
      MOCW=OOCW+AFSW+FRINGE(4)
      TCOSBX=NBOXJA*COSBOX*PLADAY
      TCOBXW=TCOSBX
      ADCW=SALARY(1)+SALARY(2)+FRINGE(1)+FRINGE(2)+FRINGE(3)
     -+HYDROW+LABCOW+TCOBXW
      GO TO 7001
 7000 DO 30 I=1,9
      NOCUL1(I)=TCATCH(I)-(1.3D-1*TCATCH(I))
      NOCUL2(I)=NOCUL1(I)-(3.0D-2*NOCUL1(I))
   30 GCOREV(I)=NOCUL2(I)*NPRICE(I)
      CULLCS=1.3D-1*TDELIC
      CULLS=CULLCS
      COSCL1=.13*TGREVS
      COSCL2=.03*TGREVS*(1.-.13)
      COSC1=COSC1+COSCL1
      COSC2=COSC2+COSCL2
      CALL PLANT
      NMEN=NMEN+MAN
      MANS=MAN
      CODEPS=CODEPR
      COINTS=COINTR
      ACCS=COINTS+CODEPS+INTLAS+DEPLAS
      SALARY(1)=SALARY(1)*LOSS
      SALARY(2)=SALARY(2)*LOSS
      LACOSS=LACOSS*LOSS
      FRINGE(1)=0.10*SALARY(1)
      FRINGE(2)=0.10*SALARY(2)
      FRINGE(3)=0.10*LACOSS
      SALARS(1)=SALARY(1)
      SALARS(2)=SALARY(2)
      HYDROS=HYDRO*0.5636
      AFSS=AFS*.5636
      FRINGE(4)=.10*AFSS
      OOCS=OOC*0.5636
      MOCS=OOCS+AFSS+FRINGE(4)
      TCOSBX=NBOXCA*COSBOX*PLADAY
      TCOBXS=TCOSBX
      ADCS=SALARY(1)+SALARY(2)+FRINGE(1)+FRINGE(2)+FRINGE(3)+HYDROS+
     -LABCOS+TCOBXS+                 COSICE
 7001 CONTINUE
      DO 23 I=1,9
      TDELIM=TDELIM+NOCUL1(I)
      TNOCUL=TNOCUL+NOCUL2(I)
   23 TGCREV=TGCREV+CCOREV(I)
      IF(N.EQ.1)CULLMN=1.0D-2*TDELIM
      IF(N.EQ.2)CULLMS=3.0D-2*TDELIM
      IF(N.EQ.1)TDELCW=TDELIC
      IF(N.EQ.2)TDELCS=TDELIC
      IF(N.EQ.1)TNOCUW=TNOCUL
      IF(N.EQ.2)TNOCUS=TNOCUL
      IF(N.EQ.1)TGCREW=TGCREV
      IF(N.EQ.2)TGCRES=TGCREV
C TRANSPORTATION COSTS TO LEAF RAPIDS
      TRCOSC=TRCOCP*TDELIC
      IF(N.EQ.1)TRCOCW=TRCOSC
      IF(N.EQ.2)TRCOCS=TRCOSC
C TRANSPORTATION COSTS TO TRANSCONA
      TRCOSM=TRCOMP*TOLLIM
      IF(N.EQ.1)TRCOMW=TRCOSM
      IF(N.EQ.2)TRCOMS=TRCOSM
C CO-OP PROFIT
      IF(N.EQ.1)COPROW=((TGCREW/TNOCUW)-(AOCW+ACCW+TRCOCW+TRCOMW+TGREVW+
     -MOCW)/TNOCUW)
      IF(N.EQ.2)COPROS=((TGCRES/TNOCUS)-(AOCS+ACCS+TRCOCS+TRCOMS+TGREVS+
     -MOCS)/TNOCUS)
      TCPROS=COPROS*TNOCUS
      TCPROW=COPROW*TNOCUW
   24 CONTINUE
C ANNUAL TOTALS
      MOC=MOCS+MOCW
      AOC=AOCS+AOCW
      ACC=ACCW+ACCS
      TDELIC=TDELCW+TDELCS
      TGREV=TGREVW+TGREVS
      TGREVP=TGREV/TDELIC
      TGCREV=TGCREW+TGCRES
      TNOCUL=TNOCUW+TNOCUS
      TRCOSC=TRCOCW+TRCOCS
      TRCOSM=TRCOMW+TRCOMS
      CULLCO=CULLCW+CULLCS
      CULLMA=CULLMW+CULLMS
      COPROF=((TGCREV/TNOCUL)-( AOC+ ACC+TRCOSC+TRCOSM+ TGREV+MOC)/TNOCU
     -L)
      TCPROF=TCPROW+TCPROS
      MAN=MANS+MANW
      LAKEMP=LAKEMW+LAKEMS
      LABCOS=LABCOW+LACOSS
      COSICE=COSICS+COSICW
      DEPLAK=DEPLAS+DEPLAW
      COINTP=COINTW+COINTS
      CODLPK=CODLPW+CODLPS
      INTLAK=INTLAS+INTLAW
      SALARY(1)=SALARW(1)+SALARS(1)
      SALARY(2)=SALARW(2)+SALARS(2)
      BOXMAT=TCOBXW+TCOBXS
C CALCULATING DATA FOR TABLE 2 PRINTOUT
      VICW=AOCW
      AVICW=AOCW/TNOCUW
      AVICS=AOCS/TNOCUS
      NAVICW=AOCW/TDELCW
      NAVICS=AOCS/TDELCS
      VICS=ACCS
      VIC=VICW+VICS
      AVIC=AOC/TNOCUL
      NAVIC=AOC/TDELIC
      TCPPCW=TRCOCW/TNOCUW
      TCPPCS=TRCOCS/TNOCUS
      TCPPCT=TRCOSC/TNOCUL
      TCPPMW=TRCOMW/TNOCUW
      TCPPMS=TRCOMS/TNOCUS
      TCPPMT=TRCOSM/TNOCUL
      TVCW=TGREVW+VICW+TRCOCW+TRCOMW
      TVCS=TGREVS+VICS+TRCOCS+TRCOMS
      TVC =TGREV +VIC +TRCOSC+TRCOSM
C  CALCULATE NUMBER OF PEOPLE EMPLOYED BY THE CO-OP
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C   3 IN MANAGEMENT
C  CREW OF 4 TOTAL ON THE FREIGHT BOATS ( SUMMER )
CC PLUS LABOUR AT THE PLANT AND LAKESIDE STATIONS
CC  BOAT CREW WAGES ARE 16000 DOLLIS TOTAL ( SUMMER )
      TME=3.+4.+NMEN
      TEARN=AFS+LABCOS+SALARY(1)+SALARY(2)+16000.
C
      ATVCS=TVCS/TNOCUS
      ATVCW=TVCW/TNOCUW
      ATVC=TVC/TNOCUL
      NATVCW=TVCW/TDELCW
      NATVCS=TVCS/TDELCS
      NATVC =TVC /TDELIC
      NAMOCW=MOCW/TDELCW
      NAMOCS=MOCS/TDELCS
      NAMOC =MOC /TDELIC
      AACCW=ACCW/TNOCUW
      AACCS=ACCS/TNOCUS
      AACC =ACC /TNOCUL
      NAACCW=ACCW/TDELCW
      NAACCS=ACCS/TDELCS
      NAACC =ACC /TDELIC
      AMOC=MOC/TNOCUL
      AMOCS=MOCS/TNOCUS
      AMOCW=MOCW/TNOCUW
      TFCW=MOCW+ACCW
      TFCS=MOCS+ACCS
      TFC =MOC +ACC
      ATFCW=TFCW/TNOCUW
      ATFCS=TFCS/TNOCUS
      ATFC =TFC /TNOCUL
      NATFCW=TFCW/TDELCW
      NATFCS=TFCS/TDELCS
      NATFC =TFC /TDELIC
      AGCREW=TGCREW/TNOCUW
      AGCRES=TGCRES/TNOCUS
      AGCREV=TGCREV/TNOCUL
      AGREPW=TGREVW/TNOCUW
      AGREPS=TGREVS/TNOCUS
      AGPEVP=TGREV /TNOCUL
      NCOPRW=((TGCREW        )-TGREVW-TRCOCW-TRCOMW-AOCW-MOCW-ACCW)
     1/TDELCW
      NCOPRS=((TGCRES        )-TGREVS-TRCOCS-TRCOMS-AOCS-MOCS-ACCS)
     1/TDELCS
      NCOPRF=((TGCREV        )-TGREV-TRCOSC-TRCOSM-AOC-MOC-ACC)/TDELIC
      TCW=TVCW+TFCW
      TCS=TVCS+TFCS
      TCT=TVC +TFC
      ATCW=TCW/TNOCUW
      ATCS=TCS/TNOCUS
      ATCT=TCT/TNOCUL
      ATCPW=TCW/TDELCW
      ATCPS=TCS/TDELCS
      ATCPT=TCT/TDELIC
C PRINTING TABLES
      PRINT 111
  111 FORMAT('1',48X,'TABLE I SOUTH INDIAN LAKE FISHERMEN',48X)
      PRINT 151,A,B,C,D,E,F,G,H,O
  151 FORMAT(' ',46X,9A8)
      PRINT 112,LOWS
  112 FORMAT('-','LENGTH OF WINTER SEASON',F4.1,1X,'MONTHS',40X,'GROSS R
     1EVENUE',4X,'GROSS COSTS',4X,'NET REVENUES')
      PRINT 113,TDELCW,TFISW,AGREFW,ATCOSW,ANREFW
  113 FORMAT(' ','TOTAL CATCH',F10.0,2X,'NO. OF FISHERMEN',F4.0,15X,'PER
     1 FISHERMAN',4X,F10.2,4X,F10.2,4X,F10.2)
      PRINT 115,QUOTA(1,1),QUOTA(2,1),TGREPW,TGCSPW,TNREPW
  115 FORMAT(' ','QUOTA SIZE',2X,'WHITEFISH',2X,F8.0,2X,'WALLEYE',2X,F8.
     10,3X,'PER POUND',4X,F10.2,4X,F10.2,4X,F10.2)
      PRINT 131,TGREVW,TCOSTW,TNREVW
  131 FORMAT(' ',58X,'TOTAL',12X,F10.2,4X,F10.2,4X,F10.2)
      PRINT 116
  116 FORMAT(' ','FISHING METHOD')
      PRINT 100
  100 FORMAT(' ','LAKESIDE COLLAGE')
      PRINT 114,LCSS
  114 FORMAT('-','LENGTH OF SUMMER SEASON',F4.1,1X,'MONTHS',40X,'GROSS R
     1EVENUE',4X,'GROSS COSTS',4X,'NET REVENUES')
      PRINT 113,TDELCS,TFISS,AGREFS,ATCOSS,ANREFS
      PRINT 115,QUOTA(3,1),QUOTA(4,1),TGREPS,TGCSPS,TNREPS
      PRINT 131,TGREVS,TCOSTS,TNREVS
      PRINT 116
      PRINT 100
      PRINT 120
  120 FORMAT('1',44X,'TABLE 2 LEAF RAPIDS PLANT COSTS AND REVENUES')
      PRINT 151,A,B,C,D,E,F,G,H,O
      PRINT 160
  160 FORMAT('0','I. VARIABLE COSTS',15X,'(1)',17X,'(2)',18X,'(3)',19X,
     1'(4)',17X,'(5)')
      PRINT 121
  121 FORMAT(' ',26X,'CO-OP PAYMENTS',2X,'+',2X,'VOLUME INCREMENT',2X,
     1'+',2X,'TRANSPORTATION TO',2X,'+',2X,'TRANSPORTATION TO',2X,'=',
     22X,'TOTAL VARIABLE')
      PRINT 122
  122 FORMAT(' ',27X,'TO FISHERMEN',10X,'COSTS',15X,'LEAF RAPIDS',12X,'T
     1RANSCONA',12X,'COSTS')
      PRINT 123
  123 FORMAT(' ','WINTER SEASON')
      PRINT 124,TGREVW,VICW,TRCOCW,TRCOMW,TVCW
  124 FORMAT(' ','TOTAL COSTS',15X,F10.3,10X,F10.3,11X,F10.3,12X,F10.3,
     111X,F10.3)
      PRINT 125,AGREPW,AVICW,TCPPCW,TCPPMW,ATVCW
  125 FORMAT(' ',2X,'PER LB. THE PLANT SELLS*',0X,F10.3,10X,F10.3,11X,F1
     10.3,12X,F10.3,11X,F10.3)
      PRINT 132,TGREPW,NAVICW,TRCOCP,TRCOMP,NATVCW
  132 FORMAT(' ',2X,'PER LB. THE PLANT BUYS',2X,F10.3,10X,F10.3,11X,F10.
     13,12X,F10.3,11X,F10.3)
      PRINT 126
  126 FORMAT(' ','SUMMER SEASON')
      PRINT 124,TGREVS,VICS,TRCOCS,TRCOMS,TVCS
      PRINT 125,AGREPS,AVICS,TCPPCS,TCPPMS,ATVCS
      PRINT 132,TGREPS,NAVICS,TRCOCP,TRCOMP,NATVCS
      PRINT 127
  127 FORMAT(' ','ANNUAL')
      PRINT 124,TGREV ,VIC ,TRCOSC,TRCOSM,TVC
      PRINT 125,AGREVP,AVIC ,TCPPCT,TCPPMT,ATVC
      PRINT 132,TGREVP,NAVIC ,TRCOCP,TRCOMP,NATVC
      PRINT 169,LINE
  169 FORMAT (' ',132A1)
      PRINT 163
  163 FORMAT('0','II. FIXED COSTS',28X,'(6)',21X,'(7)',18X,'(8)')
```

```
      PRINT 133
  133 FORMAT(' ',34X,'MINIMUM OPERATION COSTS',2X,'+',2X,'CAPITAL COSTS'
     1,2X,'=',2X,'TOTAL FIXED COSTS')
      PRINT 123
      PRINT 134,MOCW,ACCW,TFCW
  134 FORMAT(' ',2X,'TOTAL COSTS',28X,F10.3,12X,F10.3, 9X,F11.3)
      PRINT 135,AMOCW,AACCW,ATFCW
  135 FORMAT(' ',2X,'PER LB. THE PLANT SELLS',16X,F10.3,12X,F10.3,10X,F1
     10.3)
      PRINT 136,NAMOCW,NAACCW,NATFCW
  136 FORMAT(' ',2X,'PER LB. THE PLANT BUYS',17X,F10.3,12X,F10.3,10X,F10
     1.3)
      PRINT 125
      PRINT 134,MOCS,ACCS,TFCS
      PRINT 135,AMOCS,AACCS,ATFCS
      PRINT 136,NAMOCS,NAACCS,NATFCS
      PRINT 127
      PRINT 134,MOC ,ACC ,TFC
      PRINT 135,AMOC ,AACC ,ATFC
      PRINT 136,NAMOC ,NAACC ,NATFC
      PRINT 169,LINE
      PRINT 164
  164 FORMAT('0','III. NET PROFIT',28X,'(9)',18X,'(10)=(5)+(8)',5X,'(11)
     1=(9)-(10)')
      PRINT 143
  143 FORMAT(' ',34X,'REVENUES PAID TO CO-OP',3X,'-',3X,'TOTAL COSTS',2X
     1,'=',3X,'CO-OP PROFIT OR LOSS')
      PRINT 123
      PRINT 134,TGCREW,TCW,       TCPROW
      PRINT 135,AGCREW        ,ATCW,COPROW
      PRINT 136,TGCREW/TDELCW,ATCPW,NCOPRW
*EXTENSION*  OTHER COMPILERS MAY NOT ALLOW EXPRESSIONS IN OUTPUT LISTS
      PRINT 126
      PRINT 134,TGCRES,TCS,       TCPRCS
      PRINT 135,AGCRES,ATCS,COPROS
      PRINT 136,TGCRES/TDELCS,ATCPS,NCOPRS
*EXTENSION*  OTHER COMPILERS MAY NOT ALLOW EXPRESSIONS IN OUTPUT LISTS
      PRINT 127
      PRINT 134,TGCREV,TCT,       TCPRCF
      PRINT 135,AGCREV,ATCT,COPROF
      PRINT 136,TGCREV/TDELIC,ATCPT,NCOPRF
*EXTENSION*  OTHER COMPILERS MAY NOT ALLOW EXPRESSIONS IN OUTPUT LISTS
      PRINT 128,T,P,Q,R,S
  128 FORMAT('0',A9,2X,'TRANSPORTATION METHOD: TO PLANT',2X,2A8,'TO CORP
     1.'2X,2A8)
      PRINT 138,Z,U,V,X,Y
  138 FORMAT(' ',A8,2X,'TRANSPORTATION METHOD: TO PLANT',2X,2A8,'TO CORP
     1.'2X,2A8)
      PRINT 129
  129 FORMAT(' ','OPERATIONS')
      PRINT 130,TDELIC,TNE,TEARN
  130 FORMAT(' ','VOLUME (LB.)',5X,F10.0,5X,'EMPLOYEES',2X,F9.1,14X,'EMP
     -LOYEE INCOME',2X,F7.0)
      PRINT 137,T,CULW,CULLCW,CULLMW
  137 FORMAT(' ',A8,2X,'QUANTITY CULLED (LB.)',5X,'LAKESIDE', F8.0,2X,
     1'PLANT',2X,F10.0,12X,'CORPORATION',2X,F10.0)
      PRINT 147,Z,CULS,CULLCS,CULLMS
  147 FORMAT(' ',A8,2X,'QUANTITY CULLED (LB.)',5X,'LAKESIDE', F8.0,2X,
     1'PLANT',2X,F10.0,12X,'CORPORATION',2X,F10.0)
      PRINT 165
  125 FORMAT(' ','* ACTUAL COST PER POUND SOLD PLUS COST OF CULLED FISH
     1PER POUND SOLD')
      COSC=COSC1+COSC2
      COSCL1=0.
      COSCL2=0.
      DO 2023 IA=1,9
      COSCL1=COSCL1+PROCAT(IA)*CULLCW*(LPRICE(IA)+TRCOCW)
      COSCL1=COSCL1+PROCAT(IA)*CULLCS*(LPRICE(IA)+TRCOCS)
      COSCL2=COSCL2+PROCAT(IA)*CULLMW*(LPRICE(IA)+TRCOCW+TRCOMW)
 2023 COSCL2=COSCL2+PROCAT(IA)*CULLMS*(LPRICE(IA)+TRCOCS+TRCOMS)
      COSC=COSCL1+COSCL2
      FRINGE(4)=.10*AFS
      SALARY(1)=SALARY(1)+SALARY(2)+AFS
      FRINGE(1)=0.10*SALARY(1)
      FRINGE(3)=0.10*LABCOS
      FRIFRI=FRINGE(1)+FRINGE(3)+FRINGE(4)
      AGENCY=.08*TDELIC-.065*TDELIC*PROCAT(7)
      SALSAL=SALARY(1)+LABCOS
      BOXALL=.02*TDELIC-.01*TDELIC*PROCAT(7)
      CAMP=.01*TDELIC
      DEDUC=.01*TDELIC
      TOGREV=AGENCY+BOXALL+CAMP+DEDUC
      AGEBOX=AGENCY+BOXALL
      CAMDEC=CAMP+DEDUC
      HYDRO=HYDRCW+HYDROS
      OOC=OOCW+OOCS
      TODEPR=DEPLAK+CODEPR
      TOTINT=COINTR+INTLAK
      PLACRE=AGENCY+BOXALL
      LAKCRE=DEDUC+CAMP
      LAKDEB=LABCOS    +FRINGE(3)+COSICE+INTLAK+DEPLAK
      PLADEB=SALARY(1)+FRINGE(1)+HYDRO+OOC+CODEPR+COINTR
      PROFIT=PLACRE+LAKCRE-PLADEB-LAKDEB
      PRINT 300
  300 FORMAT('1',62X,'TABLE 5')
      PRINT 301
  301 FORMAT('0',32X,'SOUTH INDIAN LAKE CO-OP FISHERIES LTD. REVENUE AND
     1 COST STATEMENT')
      PRINT 302
  302 FORMAT(' ',35X,'PLANT',25X,'LAKE OPERATIONS',15X,'TOTALS')
      PRINT 303
  303 FORMAT(' ',29X,'DEBIT',10X,'CREDIT',14X,'DEBIT',10X,'CREDIT')
      PRINT 304
  304 FORMAT(' ','REVENUES')
      PRINT 305,AGENCY,AGENCY
  305 FORMAT(' ',2X,'AGENCY FEES',27X,F10.2,45X,F10.2)
  306 FORMAT(' ',2X,'BOX ALLOWANCE',25X,F10.2,45X,F10.2)
      PRINT 306,BOXALL,BOXALL
      PRINT 307,DEDUC,DEDUC
  307 FORMAT(' ',2X,'ICE DEDUCTION',60X,F10.2,10X,F10.2)
      PRINT 308,CAMP,CAMP
  308 FORMAT(' ',2X,'CAMP DEDUCTION',59X,F10.2,10X,F10.2)
      PRINT 309,AGEBOX,CAMDEC,TOGREV
  309 FORMAT(' ',2X,'TOTAL GROSS REVENUES',18X,F10.2,25X,F10.2,10X,F10.2
     1)
      PRINT 310
  310 FORMAT(' ','OPERATING EXPENSES')
      PRINT 311,SALARY(1),LABCOS,SALSAL
  311 FORMAT(' ',2X,'WAGES + SALARIES',7X,F10.2,25X,F10.2,25X,F10.2)
      PRINT312,FRINGE(1),FRINGE(3),FRIFRI
  312 FORMAT(' ',2X,'FRINGE BENEFITS',8X,F10.2,25X,F10.2,25X,F10.2)
      PRINT 313,BOXMAT,BOXMAT
  313 FORMAT(' ',2X,'BOXES',18X,F10.2,60X,F10.2)
      PRINT 314,HYDRO,HYDRO
  314 FORMAT(' ',2X,'HYDRO COSTS',12X,F10.2,60X,F10.2)
      PRINT 315,COSICE,COSICE
  315 FORMAT(' ',2X,'ICE EXPENSES',46X,F10.2,25X,F10.2)
      PRINT316,OOC,OOC
  316 FORMAT(' ',2X,'OFFICE OVERHEAD',8X,F10.2,60X,F10.2)
      PRINT 317
  317 FORMAT(' ','CAPITAL ACCOUNT')
      PRINT318,CCINTR,INTLAK,TOTINT
  318 FORMAT(' ',2X,'INTEREST',15X,F10.2,25X,F10.2,25X,F10.2)
      PRINT 319,CODEPR,DEPLAK,TCDEPR
  319 FORMAT(' ',2X,'DEPRECIATION',11X,F10.2,25X,F10.2,25X,F10.2)
      PRINT 320,PLADEB,PLACRE,LAKDEB,LAKCRE,PROFIT
  320 FORMAT(' ','NET PROFIT OR LOSS',7X,F10.2,5X,F10.2,10X,F10.2,5X,F10
     1.2,10X,F10.2,'**')
      PRINT 321
  321 FORMAT(//,' ** DIFFERENCE OF THIS PROFIT LOSS FIGURE AND PREVIOUS
     -ONE DUE TO ROUNDING AND CULLAGE')
      PRINT,1040
 1040 FORMAT('1')
      STOP
      END

      SUBROUTINE CAPITA(CECOST,EXLIFE,AVRARE,ANCACO,DEPREC,INTRE,VALUE,
     1NA)
      REAL MACH
      COMMON MACH
C SUBROUTINE TO ESTIMATE ANNUAL CAPITAL COSTS
      REAL*8 CECOST(10),EXLIFE(10),AVRARE,ANCACO,DEPREC,INTRE,VALUE
      DEPREC=0.000
      ANCACO=0.000
      READ,N,AVRARE
      READ, (CECOST(I),I=1,N)
C APPORTIONING CAPITAL COSTS OVER THE TWO SEASONS WHERE APPLICABLE
C FIRST TWO CAPITAL COSTS ONLY OCCUR IN ONE SEASON
      IF(NA.EQ.2) GO TO 100
      DO 11 I=3,N
   11 CECOST(I)=0.4363*CECOST(I)
      GO TO 101
  100 DO 12 I=3,N
   12 CECOST(I)=0.5636*CECOST(I)
  101 READ,(EXLIFE(I),I=1,N)
      VALUE=CECOST(1)
C FOR SUBROUTINE PLANT CAPITAL COST N IS ICE-MAKING MACHINE
      CECOST(N)=CECOST(N)+MACH
      DO 10 I=1,N
   10 DEPREC=DEPREC+(CECOST(I)/EXLIFE(I))
      ANCACO=DEPREC*(1+AVRARE)
      INTRE=DEPREC*AVRARE
      RETURN
      END

      SUBROUTINE LAKE
C
C  SIMULATION OF A LAKESIDE OPERATION
C
      REAL*8 CECOST(10),EXLIFE(10),AVRARE,ANCACO,DEPREC,INTRE,VALUE
      REAL MANDEL,LBPMD,LAKMEN,LAKEMP,LABCOS,ICESTO,IPUTUP,IFISRA(2),
     1INTLAK
      COMMON/AREA1/ LBPMD,LABCOS,ICESTO,IPUTUP,IFISRA,INTLAK,NANCY,
     1 DCATCH,REMCAP,DAYSEA,LAKEMP,CULLA,MANDEL,LAKMEN,COSICE,JANE,WASTE
     2,DEPLAK,WAGLAK,WAGICE
      COMMON/DSAPL/DLAND
      REAL MACH
      COMMON MACH
      COSICE=0.
      MANDEL=0.
      DLAND=0.
C  SIL DENOTED BY JANE = 1
      IF(JANE.EQ.1)GO TO 100
      MN=1
      GO TO 101
C  3 CAMPS AT SIL DURING SUMMER
 100  MN=1
      IF(NANCY.EQ.2) MN=3
C  CONVERT DCATCH TO PER LAKESIDE STATION BASIS
      DCATCH=DCATCH/MN
C  CALCULATE COST OF PUTTING UP ICE
  101 CONTINUE
C  NO ICE PUT UP FOR WINTER SEASON
      IF(NANCY.EQ.1) GO TO 9
      IPUTUP=ICESTO
      COSICE=WAGICE*(IPUTUP/2000.)
    9 CONTINUE
C  LA = NUMBER OF SEASON DAYS
      LA=DAYSEA
      DO 10 I=1,LA
      IF(NANCY.EQ.1) GO TO 11
C  CALCULATE REMAINING HANDLING CAPACITY OF THE LAKESIDE STATION
      REMCAP=1./(IFISRA(1)+IFISRA(2))*IPUTUP
C  CLOSE THE STATION IF RUN OUT OF ICE
      IF(REMCAP.LE.0) GO TO 1931
      IF(DCATCH.GT.REMCAP) GO TO 1907
      WASTE=0.
      GO TO 7091
C  FISH NOT TRANSPORTED IF RUN OUT OF ICE
 1907 WASTE=DCATCH-REMCAP
 7091 CULLA=CULLA+WASTE
C  REMAINING ICE
      IPUTUP=IPUTUP-IFISRA(1)*DCATCH
      DCATCH=DCATCH-WASTE
      DLAND=DLAND+DCATCH
      IPUTUP=IPUTUP-IFISRA(2)*DCATCH
   11 CONTINUE
   10 MANDEL=MANDEL+(DCATCH/LBPMD)
      GO TO 1391
 1931 PRINT 931,JANE,I
  931 FORMAT('1'///'LAKESIDE STATIONS ON LAKE',1X,I2,1X,'CLOSE ON DAY',1
     -X,I3,1X,'OF SEASON')
C  NUMBER OF MEN REQUIRED AT LAKESIDE STATION ( ROUNDED UP )
 1391 LAKMEN=MANDEL/DAYSEA
      LAKDUM=LAKMEN+1.
      LAKEMP=LAKDUM
C  LABOUR COSTS
      LABCUS=LAKEMP*WAGLAK
C  CAPITAL COSTS
      CALL CAPITA (CECOST,EXLIFE,AVRARE,ANCACO,DEPREC,INTRE,VALUE,NANCY)
```

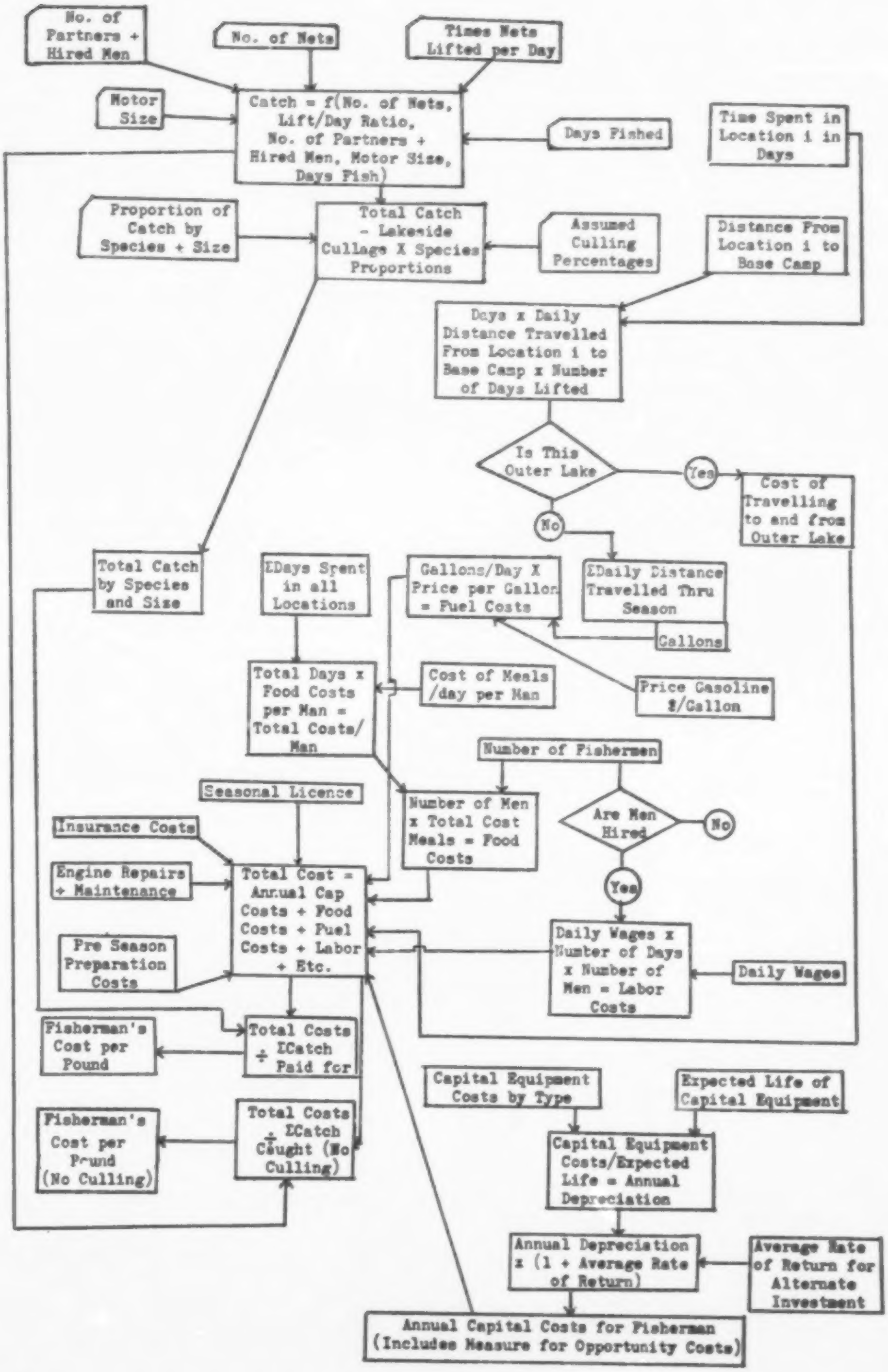
```
C  DEPRECIATION AND INTEREST ON LAKESIDE STATION
       DEPLAK=DEPREC
       INTLAK=INTRE
C  RETURN DCATCH TO PER LAKE BASIS
       DCATCH=DCATCH*MN
       DLAND=DLAND*MN
       RETURN
       END

       SUBROUTINE PLANT
       REAL*8 CFCOST(10),EXLIFE(10),AVRAKE,ANCACQ,DEPREC,INTRE,VALUE
       REAL MAN
       REAL MANNED,LABREQ(6),NBOXTR,LBBOXF,LBBOXL,LBBOXT,NBOXFB,NBOXDA,
      1HYDRO,MANOUR(2),LBPACK(6),LBPACM,ICEFIS,ICECAP
       COMMON/AREA2/DAYCAT,MANNED,LABREQ,LBPACK,LBBOXF,LBBOXL,LBBOXT,
      1NBOXFB,NBOXTR,NBOXDA,MANOUR,CULLS,PLADAY,PROCAP(6),EXCFIS,
      2CCINTP,PERLOS(6),SALARY(2),WAGPAI,BOXNED,CATVOL,BOXLOS,ADJUST,
      3TPACK,BOXUSE,EXBOX,STOCK,ICEFIS,ICECAP,ICEMAC,NORMAN,CODEPR,LBPACM
      4,BOXBLT,MAN
       REAL MACH
       COMMON MACH
C
C  SIMULATION OF PLANT OPERATIONS
C
       DO 10 L=1,6
    10 LBPACK(L)=0.
       DO 76 I=1,2
    76 SALARY(I)=0.
C  SUBTRACT OFF DAILY CULLAGE FROM LAKESIDE TO LR
       DAICUL=CULLS/PLADAY
       DAYCAT=DAYCAT-DAICUL
C  PROCESSING
       DO 12 K=2,6
       IF(PROCAP(K).EQ.0.) GO TO 11
       IF(DAYCAT.LE.PROCAP(K)) GO TO 1914
       EXCFIS=DAYCAT-PROCAP(K)
       DAYCAT=DAYCAT-EXCFIS
       LBPACK(K-1)=LBPACK(K-1)+EXCFIS
  1914 MANNED=(DAYCAT/PROCAP(K))*LABREQ(K)
C  WAGES : PROCESSING
       SALARY(1)=SALARY(1)+MANNED*WAGPAI
       DAYCAT=DAYCAT*(1-PERLOS(K))
       LBPACK(K)=DAYCAT
    12 CONTINUE
       GO TO 1763
C  NO PROCESSING
    11 LBPACK(K-1)=DAYCAT
  1763 CONTINUE
       TPACK=0.
C  DAILY BOX REQUIREMENTS FOR FISHERMEN AND LAKESIDE
       BOXNED=(CATVOL/LBBOXF)+(CATVOL/LBBOXL)
C  DAILY TURNOVER
       NBOXFB=BOXNED*BOXLOS
C  DAILY BOX REQUIREMENTS FOR SHIPPING TO TRANSCONA
       NBOXTR=CATVOL/LBBOXT
C  TOTAL DAILY POUNDS PACKED FOR TRANSCONA
       DO 13 L=1,6
    13 TPACK=TPACK+LBPACK(L)
       BOXUSE=TPACK/LBBOXT
C  NUMBER OF BOXES TO BE BUILT DAILY
```

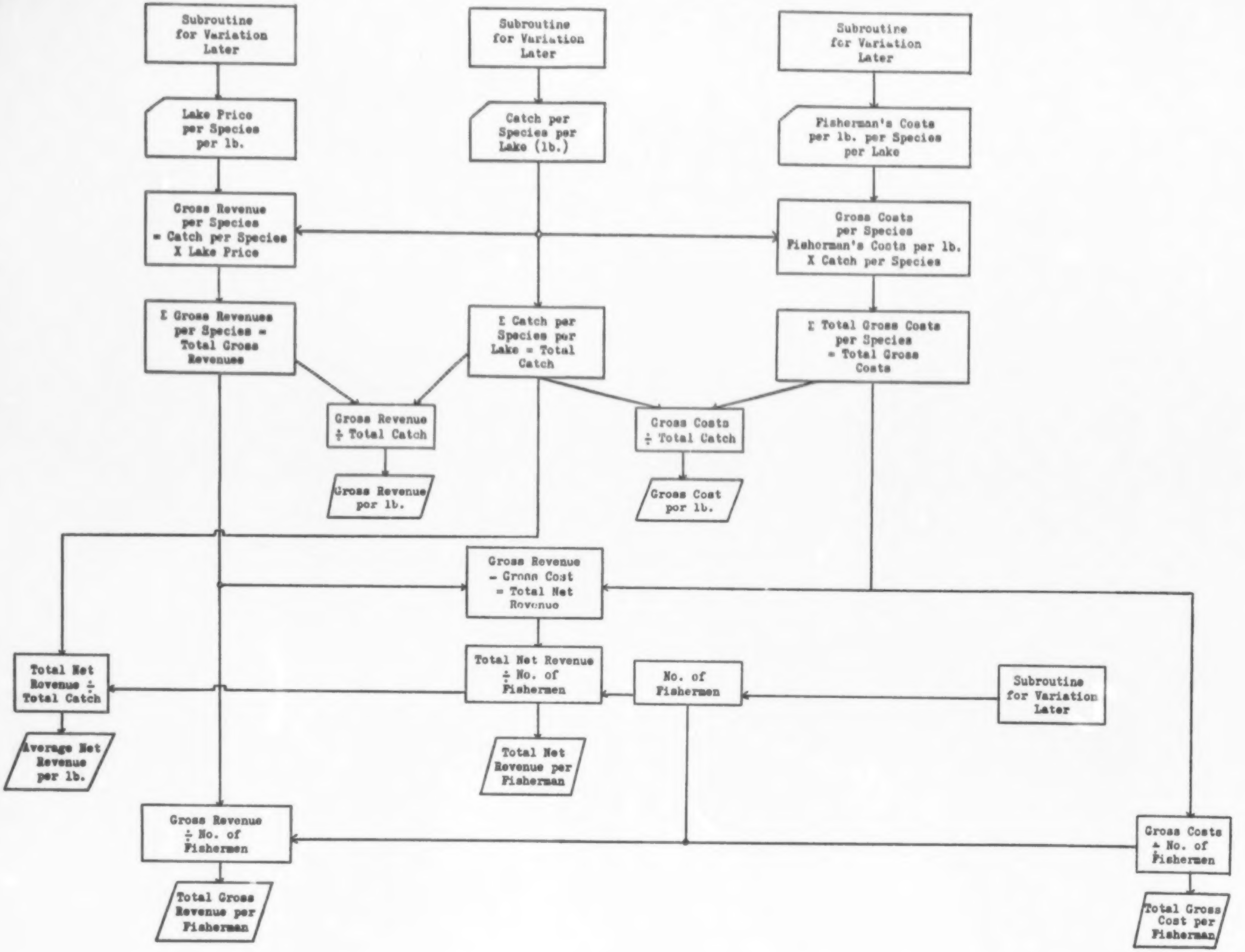
```
          NBOXDA=BOXUSE+NBOXFR
C  MANPOWER REQUIREMENTS FOR BOX-BUILDING AND PACKING
          MANDUR(1)=NBOXDA/BOXBLT
          MANDUR(2)=TPACK/LBPACM
C  DAILY MANPOWER REQUIREMENT ROUNDED UP
C  8 WORKING HOURS IN A DAY
          MEN=(MANDUR(1)+MANDUR(2))/8.+1.
          MAN=MEN
C  WAGES : BOX-BUILDING AND PACKING
          SALARY(2)=SALARY(2)+MAN*WAGPAI
          ICEMAC=2
          ICEEX=0
C  ICE REQUIREMENTS
          ICENED=TPACK*ICEFIS
C  CHECK TO SEE IF NEED TO BUY ANOTHER ICE MACHINE
     6591 IF(ICENED.LE.ICECAP) GO TO 1956
          ICEEX=ICEEX+1
          ICEMAC=ICEMAC+1
          ICECAP=ICEMAC*ICECAP
          IF(NORMAN.EQ.1) MACH=10000.*0.4363
          IF(NORMAN.EQ.2) MACH=10000.*0.5636
          PRINT 444
      444 FORMAT('1','ONE MORE ICE MACHINE IS NEEDED')
          GO TO 6591
C  PRO-RATED COST OF BUYING ADDITIONAL ICE MACHINE(S)
     1956 MACH=MACH*ICEEX
C  CAPITAL COSTS
          CALL CAPITA(CECOST,EXLIFE,AVFARE,ANCACO,DEPREC,INTRE,VALUE,NORMAN)
C  DEPRECIATION AND INTEREST
          CODEPR=DEPREC
          COINTP=INTRE
          RETURN
          END

$ENTRY
```

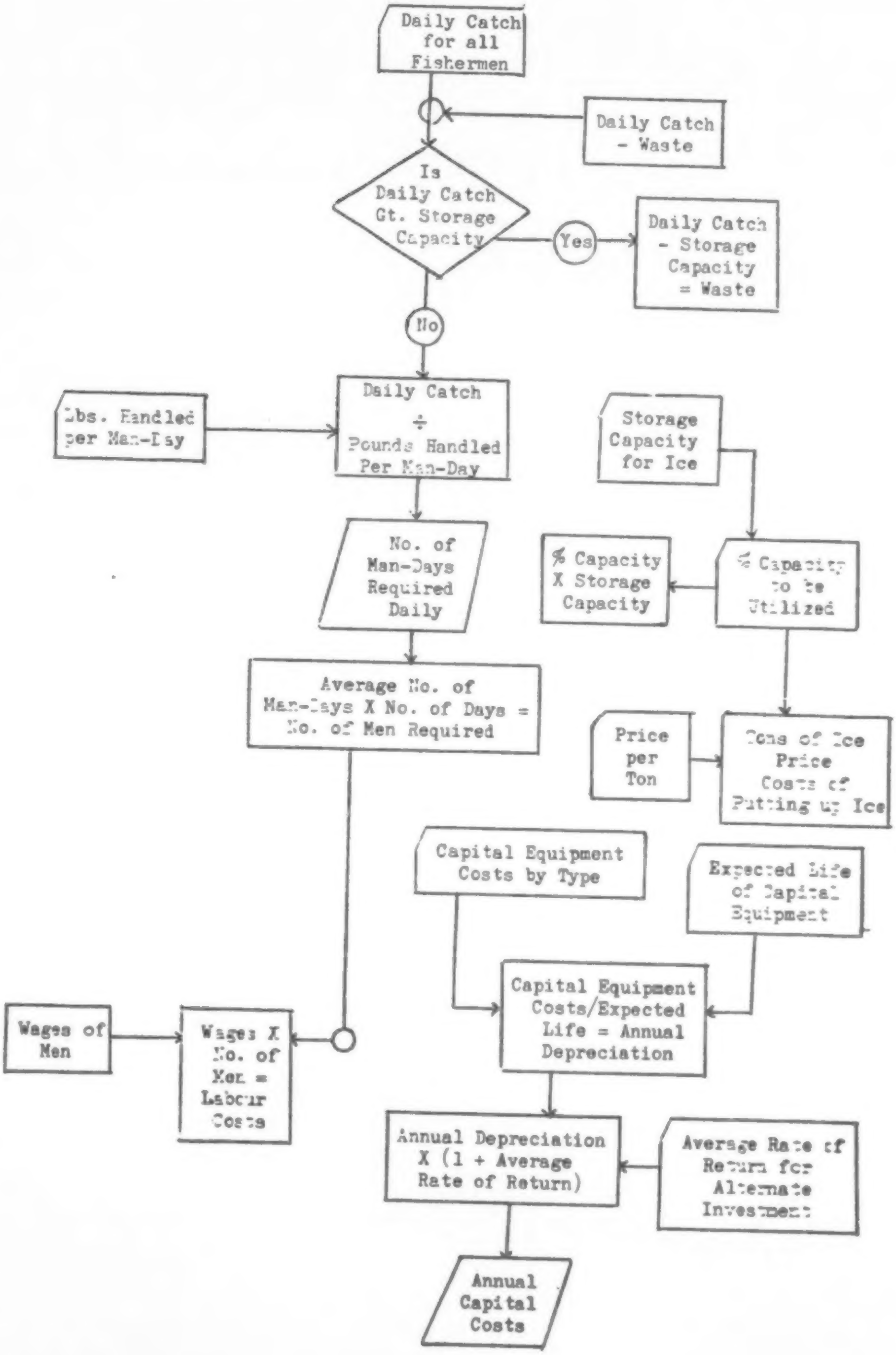
A-1 INDIVIDUAL FISHERMAN'S COSTS AND REVENUES


No. of Partners + Hired Men
No. of Nets
Times Nets Lifted per Day
Motor Size
Catch = f(No. of Nets, Lift/Day Ratio, No. of Partners + Hired Men, Motor Size, Days Fish)
Days Fished
Time Spent in Location i in Days
Proportion of Catch by Species + Size
Total Catch - Lakeside Cullage X Species Proportions
Assumed Culling Percentages
Distance From Location i to Base Camp
Days x Daily Distance Travelled From Location i to Base Camp x Number of Days Lifted
Is This Outer Lake
Yes
No
Cost of Travelling to and from Outer Lake
Total Catch by Species and Size
ΣDays Spent in all Locations
Gallons/Day X Price per Gallon = Fuel Costs
ΣDaily Distance Travelled Thru Season
Gallons
Price Gasoline $/Gallon
Total Days x Food Costs per Man = Total Costs/Man
Cost of Meals /day per Man
Number of Fishermen
Seasonal Licence
Number of Men x Total Cost Meals = Food Costs
Are Men Hired
No
Yes
Insurance Costs
Engine Repairs + Maintenance
Total Cost = Annual Cap Costs + Food Costs + Fuel Costs + Labor + Etc.
Pre Season Preparation Costs
Daily Wages x Number of Days x Number of Men = Labor Costs
Daily Wages
Fisherman's Cost per Pound
Total Costs ÷ ΣCatch Paid for
Fisherman's Cost per Pound (No Culling)
Total Costs ÷ ΣCatch Caught (No Culling)
Capital Equipment Costs by Type
Expected Life of Capital Equipment
Capital Equipment Costs/Expected Life = Annual Depreciation
Annual Depreciation x (1 + Average Rate of Return)
Average Rate of Return for Alternate Investment
Annual Capital Costs for Fisherman (Includes Measure for Opportunity Costs)

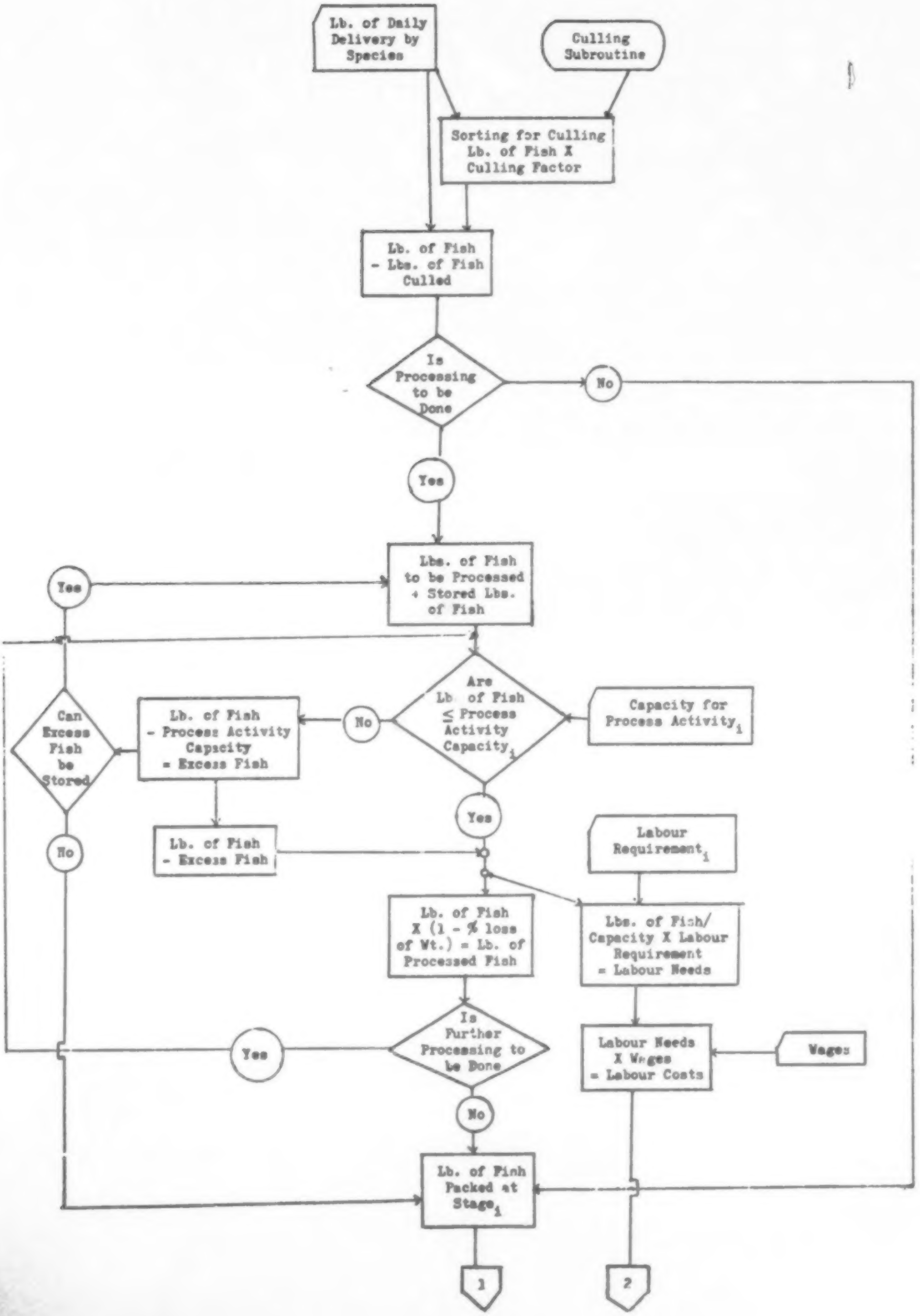
A-2 AGGREGATION AND SUMMARIZATION OF FISHERMEN COSTS AND REVENUES


Subroutine for Variation Later
Subroutine for Variation Later
Subroutine for Variation Later
Lake Price per Species per lb.
Catch per Species per Lake (lb.)
Fisherman's Costs per lb. per Species per Lake
Gross Revenue per Species = Catch per Species X Lake Price
Gross Costs per Species Fisherman's Costs per lb. X Catch per Species
Σ Gross Revenues per Species = Total Gross Revenues
Σ Catch per Species per Lake = Total Catch
Σ Total Gross Costs per Species = Total Gross Costs
Gross Revenue ÷ Total Catch
Gross Costs ÷ Total Catch
Gross Revenue por lb.
Gross Cost por lb.
Gross Revenue − Gross Cost = Total Net Revenue
Total Net Revenue ÷ Total Catch
Total Net Revenue ÷ No. of Fishermen
No. of Fishermen
Subroutine for Variation Later
Average Net Revenue per lb.
Total Net Revenue per Fisherman
Gross Revenue ÷ No. of Fishermen
Gross Costs ÷ No. of Fishermen
Total Gross Revenue per Fisherman
Total Gross Cost per Fisherman

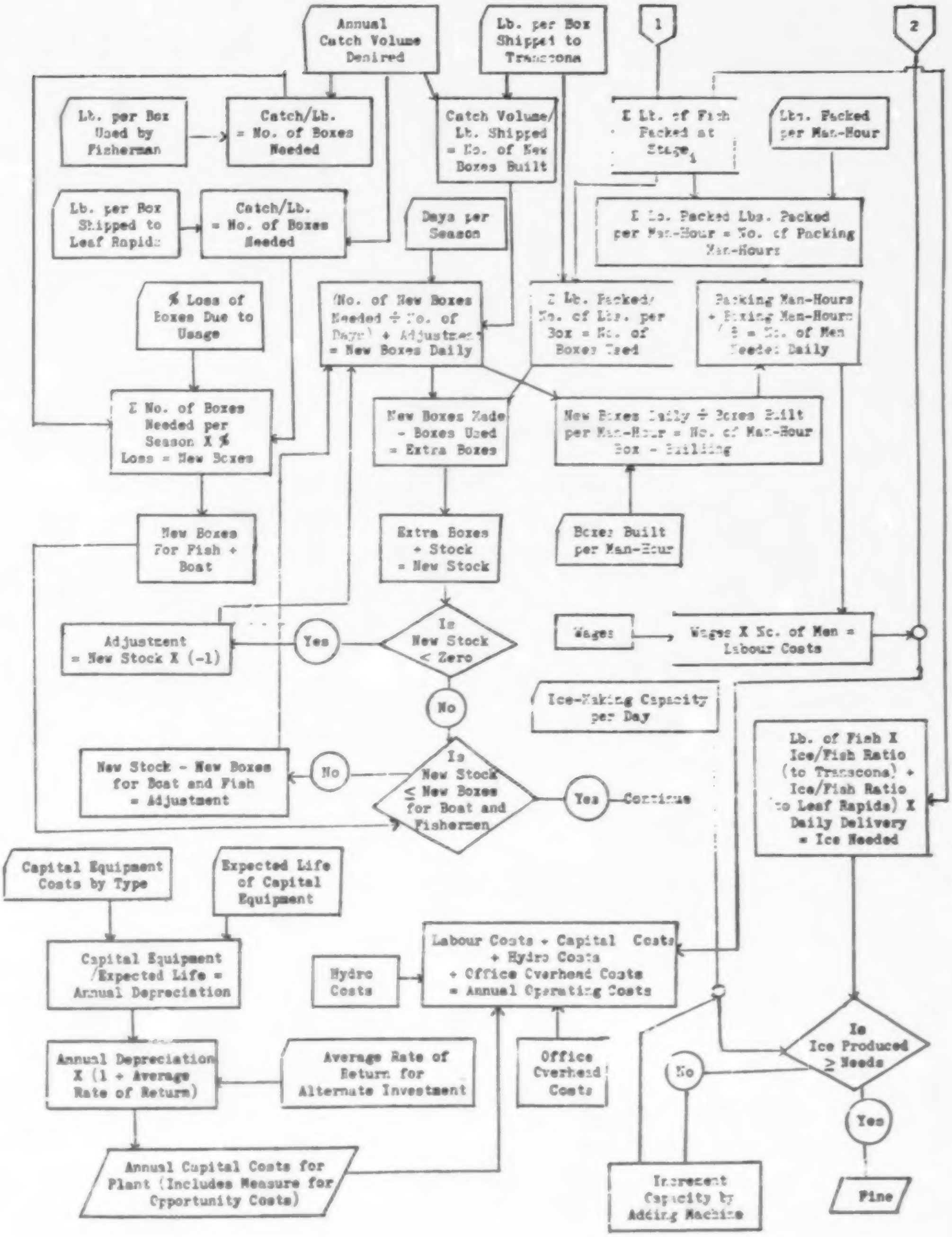
A-3 OPERATION OF A LAKESIDE STATION


Daily Catch for all Fishermen
Daily Catch - Waste
Is Daily Catch Gt. Storage Capacity
Yes
Daily Catch - Storage Capacity = Waste
No
Lbs. Handled per Man-Day
Daily Catch ÷ Pounds Handled Per Man-Day
Storage Capacity for Ice
No. of Man-Days Required Daily
% Capacity X Storage Capacity
% Capacity to be Utilized
Average No. of Man-Days X No. of Days = No. of Men Required
Price per Ton
Tons of Ice Price Costs of Putting up Ice
Capital Equipment Costs by Type
Expected Life of Capital Equipment
Capital Equipment Costs/Expected Life = Annual Depreciation
Wages of Men
Wages X No. of Men = Labour Costs
Annual Depreciation X (1 + Average Rate of Return)
Average Rate of Return for Alternate Investment
Annual Capital Costs

A-4-1 OPERATION OF THE LEAF RAPIDS PLANT


Lb. of Daily Delivery by Species
Culling Subroutine
Sorting for Culling Lb. of Fish X Culling Factor
Lb. of Fish - Lbs. of Fish Culled
Is Processing to be Done
No
Yes
Lbs. of Fish to be Processed + Stored Lbs. of Fish
Yes
Are Lb. of Fish ≤ Process Activity Capacity$_i$
Capacity for Process Activity$_i$
No
Lb. of Fish - Process Activity Capacity = Excess Fish
Can Excess Fish be Stored
No
Lb. of Fish - Excess Fish
Yes
Labour Requirement$_i$
Lb. of Fish X (1 - % loss of Wt.) = Lb. of Processed Fish
Lbs. of Fish/ Capacity X Labour Requirement = Labour Needs
Is Further Processing to be Done
Yes
Labour Needs X Wages = Labour Costs
Wages
No
Lb. of Fish Packed at Stage$_i$
1
2

A-4-2 OPERATION OF THE LEAF RAPIDS PLANT (continued)[a,b]

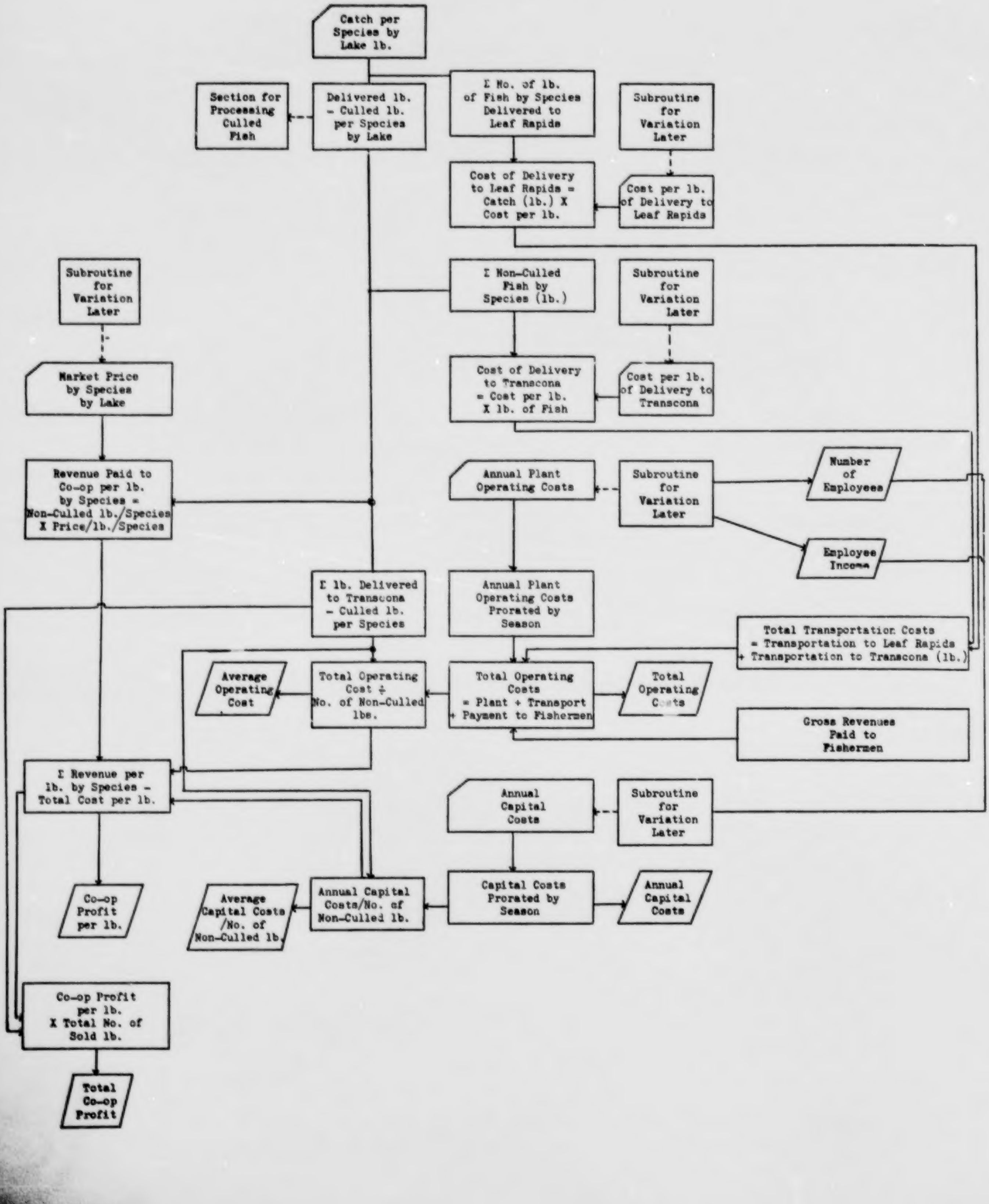

Annual Catch Volume Desired
Lb. per Box Shipped to Transcona
1
2
Lb. per Box Used by Fisherman
Catch/Lb. = No. of Boxes Needed
Catch Volume/Lb. Shipped = No. of New Boxes Built
Σ Lb. of Fish Packed at Stage$_i$
Lbs. Packed per Man-Hour
Lb. per Box Shipped to Leaf Rapids
Catch/Lb. = No. of Boxes Needed
Days per Season
Σ Lb. Packed Lbs. Packed per Man-Hour = No. of Packing Man-Hours
% Loss of Boxes Due to Usage
(No. of New Boxes Needed ÷ No. of Days) + Adjustment = New Boxes Daily
Σ Lb. Packed/No. of Lbs. per Box = No. of Boxes Used
Packing Man-Hours + Boxing Man-Hours / 8 = No. of Men Needed Daily
Σ No. of Boxes Needed per Season X % Loss = New Boxes
New Boxes Made - Boxes Used = Extra Boxes
New Boxes Daily ÷ Boxes Built per Man-Hour = No. of Man-Hour Box - Building
New Boxes For Fish + Boat
Extra Boxes + Stock = New Stock
Boxes Built per Man-Hour
Adjustment = New Stock X (-1)
Yes
Is New Stock < Zero
Wages
Wages X No. of Men = Labour Costs
No
Ice-Making Capacity per Day
New Stock - New Boxes for Boat and Fish = Adjustment
No
Is New Stock ≤ New Boxes for Boat and Fishermen
Yes
Continue
Lb. of Fish X Ice/Fish Ratio (to Transcona) + Ice/Fish Ratio to Leaf Rapids) X Daily Delivery = Ice Needed
Capital Equipment Costs by Type
Expected Life of Capital Equipment
Capital Equipment /Expected Life = Annual Depreciation
Hydro Costs
Labour Costs + Capital Costs + Hydro Costs + Office Overhead Costs = Annual Operating Costs
Annual Depreciation X (1 + Average Rate of Return)
Average Rate of Return for Alternate Investment
Office Overhead Costs
Is Ice Produced ≥ Needs
No
Yes
Annual Capital Costs for Plant (Includes Measure for Opportunity Costs)
Increment Capacity by Adding Machine
Fine

---

[a] The inventory accounting system for boxes described in the flow chart 4-2 was not actually implemented. A simpler system described earlier is the one actually used in the analysis.

[b] In the program annual operating costs are subdivided into minimum operation costs and volume increment costs.

A-5 LEAF RAPIDS PLANT COSTS AND REVENUES STATEMENT PREPARATION


Catch per Species by Lake lb.
Section for Processing Culled Fish
Delivered lb. - Culled lb. per Species by Lake
Σ No. of lb. of Fish by Species Delivered to Leaf Rapids
Subroutine for Variation Later
Cost of Delivery to Leaf Rapids = Catch (lb.) X Cost per lb.
Cost per lb. of Delivery to Leaf Rapids
Subroutine for Variation Later
Σ Non-Culled Fish by Species (lb.)
Subroutine for Variation Later
Market Price by Species by Lake
Cost of Delivery to Transcona = Cost per lb. X lb. of Fish
Cost per lb. of Delivery to Transcona
Revenue Paid to Co-op per lb. by Species = Non-Culled lb./Species X Price/lb./Species
Annual Plant Operating Costs
Subroutine for Variation Later
Number of Employees
Employee Income
Σ lb. Delivered to Transcona - Culled lb. per Species
Annual Plant Operating Costs Prorated by Season
Total Transportation Costs = Transportation to Leaf Rapids + Transportation to Transcona (lb.)
Average Operating Cost
Total Operating Cost ÷ No. of Non-Culled lbs.
Total Operating Costs = Plant + Transport + Payment to Fishermen
Total Operating Costs
Gross Revenues Paid to Fishermen
Σ Revenue per lb. by Species - Total Cost per lb.
Annual Capital Costs
Subroutine for Variation Later
Co-op Profit per lb.
Average Capital Costs /No. of Non-Culled lb.
Annual Capital Costs/No. of Non-Culled lb.
Capital Costs Prorated by Season
Annual Capital Costs
Co-op Profit per lb. X Total No. of Sold lb.
Total Co-op Profit

APPENDIX B

SPECIFICATION AND ESTIMATION OF FISH PRODUCTION FUNCTIONS FOR SOUTH INDIAN LAKE

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APPENDIX B: SPECIFICATION AND ESTIMATION OF FISH PRODUCTION FUNCTIONS FOR SOUTH INDIAN LAKE 1

APPENDIX B: SPECIFICATION AND ESTIMATION OF FISH PRODUCTION FUNCTIONS FOR SOUTH INDIAN LAKE

A physical production function in terms of physical inputs was desired for each of the summer and winter fisheries of South Indian Lake in order to predict seasonal catches for individual fishermen employing different fishing tactics. It was preferable to specify the production function in daily catch figures and then to multiply predicted daily catch by the number of days fished rather than estimate aggregate production directly, because individual fishermen make decisions on a daily rather than seasonal basis. Thus, the choice of dependent variable was established as daily catch.

Available data on the fisheries of Lakes Manitoba, Winnipegosis, and Winnipeg indicate that the lift/set ratio, the average number of nets lifted and motor size are important determinants of gross income per fishermen for the summer season. The important explanatory variables for the winter fishery were found to be the lift/set ratio, the average number of nets lifted, and ownership of a bombardier.[1] On this basis, these factors were hypothesized as important determinants of physical production per fishing day for the appropriate seasons on South Indian Lake.

There are approximately equal numbers of two-man and one-man yawl operations in the summer fishery of South Indian Lake. It was hypothesized that the two-man yawls would be relatively more productive. Consequently, the size of enterprise was an additional a priori designated important variable for the summer season. Therefore, an equation of the form:

---

[1] Unpublished analyses of Fishermen's Management Development Program records from Lakes Winnipeg, Manitoba and Winnipegosis for summer, fall and winter of 1972 from Department of Agricultural Economics, University of Manitoba.

$$Y_i = \alpha + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} + \beta_4 X_{4i} + \text{error term} \qquad (1)$$

was specified for the summer season

where:

Y_i = average daily catch for enterprise i;

X_{1i} = motor size for enterprise i;

X_{2i} = lift/set ratio for enterprise i;

X_{3i} = average number of nets set for enterprise i; and

X_{4i} = size of enterprise i (number of partners plus hired help).

Since the records for only 17 fishermen were available, one could not justify (in a statistical sense) a search for a "best" equation. Consequently, the above equation, the coefficients of which were estimated by ordinary least squares, was accepted as the summer fish production function regardless of the significance or non-significance of the individual t values for each coefficient.[2] The estimated equation took the form:

$$\hat{Y}_i = -2.33634 + 1.98041 X_{1i} + 122.2176 X_{2i} + 10.7995 X_{3i} + 75.8709 X_{4i} \qquad (2)$$

---

[2] This was possible given the results of analyses conducted given more extensive information on the lakes studied in Southern Manitoba.

where:

$\hat{Y}_i$ is the predicted Y_i.

Records for only 6 fishing enterprises were available for the winter season: two dog-team, one bombardier, and three bombardier-snowmobile operations. The small number of data points presented a formidable problem in terms of estimation. Visual inspection of the data indicated a sharp decline in daily catch for most fishermen after the middle of February (after The Trapper's Festival at The Pas) accompanied by a drop in the lift/set ratio. This suggested subdividing the winter season into 2 parts, namely before and after February 10. This procedure resulted in 11[3] potential observations. However, the two partners of one of the dog-teams listed their catches separately so that it was difficult to add pair-wise catches to make them comparable to the data from other enterprises. Also, inspection of this enterprise's daily catch record showed a large deviation from the norm for other fishermen using approximately the same fishing tactics. These two complications suggested use of a dummy variable for this enterprise. However, it was desirable to form a production function void of individual peculiarities. Therefore, this enterprise (hence, two observations) was dropped from the analysis. This left five enterprises, only one of which was a dog team. To avoid using a dummy variable for dog teams (an hence for that enterprise) the winter capital investment index (bombardier) was not used as an explanatory variable. Unlike the summer fishery, the winter fishery involves only two-man enterprises.

---

[3] One fishing enterprise only fished early in the season.

Hence, size of enterprise was not an appropriate regressor. These considerations left two regressors to be explained by average daily production (of each sub-season) utilizing only nine data points. While this is less than ideal, no superior alternative could be devised. Therefore, the winter production function was specified as:

$$Y_i = \alpha + \beta_1 X_{1i} + \beta_2 X_{2i} + \text{error term} \qquad (3)$$

where:

Y_i = production per fishing day for the $_i$th sub-season;

X_{1i} = lift/set ratio during sub-season i; and

X_{2i} = average number of nets lifted during sub-season i.

As before, no statistical search for a "best" equation was conducted. The statistically estimated equation was:

$$\hat{Y}_i = -645.3459 + 2075.111\, X_{1i} + 25.9543\, X_{2i} \qquad (4)$$

Again, the significance or non-significance of individual coefficients was not investigated.

Prediction equation (4) was used to predict winter average daily production for each enterprise by using values of the lift/set ratio and the average number of nets derived from data for the whole season.

The predicted total production for the summer sample of size 17 was high by 5 percent. The predicted total figure for the winter sample of size 5 was low by 7 percent. Although discrepancies for individual fishermen were higher, it appears that the prediction equations are "good" when one looks at the summer and winter fisheries as a whole.

Data supplied by K. Weagle of the Freshwater Institute, Environment Canada was instrumental in performing the regression analysis described above. D. Topolinoki of the Freshwater Institute provided the basic economic data for individual fishermen. Their support was an essential ingredient of this study.

APPENDIX C

RESULTS OF ANALYSES CONDUCTED

APPENDIX C

Results of Analyses Conducted[1]

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[1] Since the same basic fisherman enterprise types are utilized in all simulations, the fisherman enterprise results are only present for the simulation of operations as conducted in 1972-73. Only three tables, namely Table 1 summarizing fishermen enterprise results, Table 2 containing results of the total fishery co-operative operation and Table 5 showing the Leaf Rapids plant balance sheet, are presented. Fishermen enterprise results excluded are available from the authors.

```
                                        TABLE 3 FISHING ENTERPRISE  1
WINTER  SEASON
NUMBER OF LIKE ENTERPRISES    4

 FISHING EQUIPMENT                                          CATCH INFORMATION
  BOMBARDIER        2500.00    ESTIMATED MARKET VALUE    CATCH BY SPECIES AND SIZE      GROUP TOTAL      GROUP AVERAGE
  NO. OF NETS    6.  TOTAL LENGTH     560.  YARDS           WHITEFISH   JUMBO          267. LB.
                                                                         LARGE          879. LB.
 FISHING EFFORT                                                          MEDIUM       11833. LB.
  NO. OF LIFT/DAYS   0.440      DAYS FISHED  38.                         SMALL          471. LB.
  DISTANCE TRAVELLED/DAY        5.  MILES                            SUB-TOTAL        13450. LB.
                                   PER SEASON                   WALLEYE                1868. LB.
 COSTS                                                          JACKFISH                377. LB.
  INTEREST          $        28.99                              ROUGH FISH                0. LB.
  DEPRECIATION              362.43                              TOTAL                 15694. LB.
  EQUIPMENT + REPAIR        940.00
  FUEL COSTS                150.48
  HIRED LABOUR              380.00
  FOOD COSTS                101.46                            LAKESIDE CULLAGE         6726. LB.
  TRAVEL TO OUTER LAKES       0.00
  LICENCE                    10.00                            POTENTIAL GROSS INCOME WITHOUT LAKESIDE CULLAGE     4083.29
  OTHER                     311.40
  TOTAL                    2284.77                            GROSS INCOME WITH LAKESIDE CULLAGE                  2858.30

                           NET INCOME WITH LAKESIDE CULLAGE                    573.53
                           NET INCOME WITH LAKESIDE CULLAGE PER PARTNER        573.53
                 POTENTIAL NET INCOME WITHOUT LAKESIDE CULLAGE                1798.52
                 POTENTIAL NET INCOME WITHOUT LAKESIDE CULLAGE PER PARTNER    1798.52
```

TABLE 4 SUMMARY FISHING ENTERPRISE TYPE SINGLE OPERATION

```
WINTER  SEASON

 FISHING EQUIPMENT                                              CATCH INFORMATION
  BOMBARDIER          2500.00    ESTIMATED MARKET VALUE      CATCH BY SPECIES AND SIZE      GROUP TOTAL      GROUP AVERAGE
  NO. OF NETS     6.  TOTAL LENGTH     560.  YARDS              WHITEFISH    JUMBO       1067. LB.            267. LB.
                                                                             LARGE       3515. LB.            879. LB.
 FISHING EFFORT                                                              MEDIUM     47334. LB.          11833. LB.
  NO. OF LIFT/DAYS    0.440      DAYS FISHED  38.                            SMALL       1883. LB.            471. LB.
  DISTANCE TRAVELLED/DAY         5.  MILES                               SUB-TOTAL      53800. LB.          13450. LB.
                                    PER SEASON                  WALLEYE                  7470. LB.           1868. LB.
 COSTS                                                          JACKFISH                 1507. LB.            377. LB.
  INTEREST           $       28.99                              ROUGH FISH                  0. LB.              0. LB.
  DEPRECIATION              362.43                              TOTAL                   62777. LB.          15694. LB.
  EQUIPMENT + REPAIR        940.00
  FUEL COSTS                150.48
  HIRED LABOUR              380.00
  FOOD COSTS                101.46                           LAKESIDE CULLAGE            6726. LB.
  TRAVEL TO OUTER LAKES       0.00
  LICENCE                    10.00                           POTENTIAL GROSS INCOME WITHOUT LAKESIDE CULLAGE   16333.16
  OTHER                     311.40
  TOTAL                    2284.77                           GROSS INCOME WITH LAKESIDE CULLAGE                11433.21

                              NET INCOME WITH LAKESIDE CULLAGE                    2294.14
                    POTENTIAL NET INCOME WITHOUT LAKESIDE CULLAGE                 7194.09

                  AVERAGE GROSS INCOME WITH LAKESIDE CULLAGE PER FISHERMAN     2858.30
         POTENTIAL AVERAGE GROSS INCOME ZERO  LAKESIDE CULLAGE PER FISHERMAN     4083.29
                  AVERAGE NET   INCOME WITH LAKESIDE CULLAGE PER FISHERMAN      573.53
         POTENTIAL AVERAGE NET   INCOME ZERO  LAKESIDE CULLAGE PER FISHERMAN     1798.52

                      NUMBER OF ENTERPRISES IN GROUP     4.
```

```
                                            TABLE 3 FISHING ENTERPRISE  9
WINTER  SEASON

NUMBER OF LIKE ENTERPRISES   4

  FISHING EQUIPMENT                                          CATCH INFORMATION
   DOG TEAM            453.00    ESTIMATED MARKET VALUE    CATCH BY SPECIES AND SIZE      GROUP TOTAL      GROUP AVERAGE
   NO. OF NETS     8.  TOTAL LENGTH     820.  YARDS             WHITEFISH    JUMBO          262. LB.
                                                                             LARGE          864. LB.
  FISHING EFFORT                                                             MEDIUM       11627. LB.
   NO. OF LIFT/DAYS    0.370     DAYS FISHED  46.                            SMALL          463. LB.
   DISTANCE TRAVELLED/DAY        4.  MILES                               SUB-TOTAL        13216. LB.
                                   PER SEASON                   WALLEYE                    1835. LB.
  COSTS                                                         JACKFISH                    370. LB.
   INTEREST            $        21.07                           ROUGH FISH                    0. LB.
   DEPRECIATION                263.43                           TOTAL                     15421. LB.
   EQUIPMENT + REPAIR            0.00
   FUEL COSTS                    0.00
   HIRED LABOUR                  0.00
   FOOD COSTS                    0.00                         LAKESIDE CULLAGE             6609. LB.
   TRAVEL TO OUTER LAKES         0.00
   LICENCE                      10.00                         POTENTIAL GROSS INCOME WITHOUT LAKESIDE CULLAGE    4012.18
   OTHER                       538.00
   TOTAL                       832.51                         GROSS INCOME WITH LAKESIDE CULLAGE                  2808.52

                               NET INCOME WITH LAKESIDE CULLAGE                    1976.01
                               NET INCOME WITH LAKESIDE CULLAGE PER PARTNER         988.01
                     POTENTIAL NET INCOME WITHOUT LAKESIDE CULLAGE                 3179.67
                     POTENTIAL NET INCOME WITHOUT LAKESIDE CULLAGE PER PARTNER     1589.83
```

TABLE 4 SUMMARY FISHING ENTERPRISE TYPE PARTNERSHIP(2)

```
WINTER  SEASON

  FISHING EQUIPMENT                                                  CATCH INFORMATION
   DOG TEAM              453.00    ESTIMATED MARKET VALUE     CATCH BY SPECIES AND SIZE      GROUP TOTAL      GROUP AVERAGE     4
   NO. OF NETS    8.  TOTAL LENGTH     820.  YARDS                WHITEFISH   JUMBO          2116. LB.          529. LB.
                                                                              LARGE          6970. LB.         1742. LB.
  FISHING EFFORT                                                              MEDIUM        93843. LB.        23461. LB.
   NO. OF LIFT/DAYS   0.370      DAYS FISHED  46.                             SMALL          3734. LB.          933. LB.
   DISTANCE TRAVELLED/DAY        4.  MILES                                 SUB-TOTAL       106662. LB.        26666. LB.
                                      PER SEASON                  WALLEYE                   14811. LB.         3703. LB.
  COSTS                                                           JACKFISH                   2987. LB.          747. LB.
   INTEREST           $      21.07                                ROUGH FISH                    0. LB.            0. LB.
   DEPRECIATION             263.43                                TOTAL                     61683. LB.        15421. LB.
   EQUIPMENT + REPAIR         0.00
   FUEL COSTS                 0.00
   HIRED LABOUR               0.00
   FOOD COSTS                 0.00
   TRAVEL TO OUTER LAKES      0.00                              LAKESIDE CULLAGE           6609. LB.
   LICENCE                   10.00
   OTHER                    538.00                              POTENTIAL GROSS INCOME WITHOUT LAKESIDE CULLAGE   16048.71
   TOTAL                    832.51
                                                                GROSS INCOME WITH LAKESIDE CULLAGE                11234.09

                                NET INCOME WITH LAKESIDE CULLAGE                    7904.06
                     POTENTIAL NET INCOME WITHOUT LAKESIDE CULLAGE                 12718.67

                 AVERAGE GROSS INCOME WITH LAKESIDE CULLAGE PER FISHERMAN      1404.26
       POTENTIAL AVERAGE GROSS INCOME ZERO LAKESIDE CULLAGE PER FISHERMAN      2006.09
                 AVERAGE NET   INCOME WITH LAKESIDE CULLAGE PER FISHERMAN       988.01
       POTENTIAL AVERAGE NET   INCOME ZERO LAKESIDE CULLAGE PER FISHERMAN      1589.83

                      NUMBER OF ENTERPRISES IN GROUP     4.
```

```
                                          TABLE 2 FISHING ENTERPRISE 10
WINTER  SEASON

NUMBER OF LIKE ENTERPRISES    4

  FISHING EQUIPMENT                                                  CATCH INFORMATION
   BOMBARDIER-SKIDO    3700.00    ESTIMATED MARKET VALUE       CATCH BY SPECIES AND SIZE      GROUP TOTAL      GROUP AVERAGE
   NO. OF NETS     9.  TOTAL LENGTH      790.  YARDS                  WHITEFISH   JUMBO         195. LB.
                                                                                  LARGE         644. LB.
  FISHING EFFORT                                                                  MEDIUM       8669. LB.
   NO. OF LIFT/DAYS    0.320      DAYS FISHED  52.                                SMALL         345. LB.
   DISTANCE TRAVELLED/DAY         3.  MILES                                   SUB-TOTAL        9854. LB.
                                      PER SEASON                      WALLEYE                  1368. LB.
  COSTS                                                               JACKFISH                  276. LB.
   INTEREST          $        38.59                                   ROUGH FISH                  0. LB.
   DEPRECIATION              482.43                                   TOTAL                   11498. LB.
   EQUIPMENT + REPAIR        210.00
   FUEL COSTS                124.90
   HIRED LABOUR                0.00
   FOOD COSTS                  0.00                                LAKESIDE CULLAGE            4928. LB.
   TRAVEL TO OUTER LAKES       0.00
   LICENCE                    10.00                                POTENTIAL GROSS INCOME WITHOUT LAKESIDE CULLAGE     2991.47
   OTHER                     410.35
   TOTAL                    1276.18                                GROSS INCOME WITH LAKESIDE CULLAGE                  2094.03

                                 NET INCOME WITH LAKESIDE CULLAGE                      817.85
                                 NET INCOME WITH LAKESIDE CULLAGE PER PARTNER          408.92
                     POTENTIAL NET INCOME WITHOUT LAKESIDE CULLAGE                    1715.29
                     POTENTIAL NET INCOME WITHOUT LAKESIDE CULLAGE PER PARTNER         857.64
```

```
WINTER  SEASON                              TABLE 3 FISHING ENTERPRISE 11

NUMBER OF LIKE ENTERPRISES    4

  FISHING EQUIPMENT                                                   CATCH INFORMATION
   BOMBARDIER-SKIDOO   3700.00    ESTIMATED MARKET VALUE     CATCH BY SPECIES AND SIZE      GROUP TOTAL      GROUP AVERAGE
   NO. OF NETS     8.  TOTAL LENGTH      800.  YARDS                 WHITEFISH    JUMBO         393. LB.
                                                                                  LARGE        1296. LB.
  FISHING EFFORT                                                                  MEDIUM      17452. LB.
   NO. OF LIFT/DAYS    0.400      DAYS FISHED  59.                                SMALL         694. LB.
   DISTANCE TRAVELLED/DAY          3.  MILES                                  SUB-TOTAL       19836. LB.
                                        PER SEASON                   WALLEYE                   2754. LB.
  COSTS                                                              JACKFISH                   555. LB.
   INTEREST            $       38.59                                 ROUGH FISH                   0. LB.
   DEPRECIATION               482.43                                 TOTAL                    23145. LB.
   EQUIPMENT + REPAIR         319.00
   FUEL COSTS                 212.40
   HIRED LABOUR              1180.00
   FOOD COSTS                 315.06                            LAKESIDE CULLAGE              9919. LB.
   TRAVEL TO OUTER LAKES        0.00
   LICENCE                     10.00                            POTENTIAL GROSS INCOME WITHOUT LAKESIDE CULLAGE      6021.89
   OTHER                      407.40
   TOTAL                     2964.89                            GROSS INCOME WITH LAKESIDE CULLAGE                   4215.33

                                  NET INCOME WITH LAKESIDE CULLAGE                     1250.44
                                  NET INCOME WITH LAKESIDE CULLAGE PER PARTNER          625.22
                      POTENTIAL NET INCOME WITHOUT LAKESIDE CULLAGE                    3057.01
                      POTENTIAL NET INCOME WITHOUT LAKESIDE CULLAGE PER PARTNER        1528.50
```

```
WINTER  SEASON                                        TABLE 3 FISHING ENTERPRISE 12

NUMBER OF LIKE ENTERPRISES    4

  FISHING EQUIPMENT                                                  CATCH INFORMATION
   BOMBARDIER-SKIDO    3700.00    ESTIMATED MARKET VALUE      CATCH BY SPECIES AND SIZE      GROUP TOTAL     GROUP AVERAGE
   NO. OF NETS     9.  TOTAL LENGTH     870.  YARDS                  WHITEFISH   JUMBO          412. LB.
                                                                                 LARGE         1357. LB.
  FISHING EFFORT                                                                 MEDIUM       18270. LB.
   NO. OF LIFT/DAYS    0.350      DAYS FISHED  79.                               SMALL          727. LB.
   DISTANCE TRAVELLED/DAY         2.  MILES                                  SUB-TOTAL        20765. LB.
                                      PER SEASON                     WALLEYE                   2883. LB.
  COSTS                                                              JACKFISH                   582. LB.
   INTEREST            $     38.59                                   ROUGH FISH                   0. LB.
   DEPRECIATION             492.43                                   TOTAL                    24230. LB.
   EQUIPMENT + REPAIR       850.00
   FUEL COSTS               207.38
   HIRED LABOUR             790.00
   FOOD COSTS               210.93
   TRAVEL TO OUTER LAKES      0.00                                 LAKESIDE CULLAGE          10384. LB.
   LICENCE                   10.00
   OTHER                    302.00                                 POTENTIAL GROSS INCOME WITHOUT LAKESIDE CULLAGE    6304.23
   TOTAL                   2901.33
                                                                   GROSS INCOME WITH LAKESIDE CULLAGE                 4412.96

                               NET INCOME WITH LAKESIDE CULLAGE                      1511.63
                               NET INCOME WITH LAKESIDE CULLAGE PER PARTNER           755.81
                     POTENTIAL NET INCOME WITHOUT LAKESIDE CULLAGE                   3402.90
                     POTENTIAL NET INCOME WITHOUT LAKESIDE CULLAGE PER PARTNER       1701.45
```

TABLE 4 SUMMARY FISHING ENTERPRISE TYPE PARTNERSHIP(2)

```
WINTER  SEASON

  FISHING EQUIPMENT                                                  CATCH INFORMATION
   BOMBARDIER-SKIDO   3700.00    ESTIMATED MARKET VALUE      CATCH BY SPECIES AND SIZE      GROUP TOTAL      GROUP AVERAGE
   NO. OF NETS     8.  TOTAL LENGTH      817.  YARDS               WHITEFISH   JUMBO      6119. LB.          510. LB.
                                                                               LARGE     20157. LB.         1680. LB.
  FISHING EFFORT                                                               MEDIUM   271405. LB.        22617. LB.
   NO. OF LIFT/DAYS   0.357      DAYS FISHED  63.                              SMALL     10799. LB.          900. LB.
   DISTANCE TRAVELLED/DAY        3.  MILES                                 SUB-TOTAL    308481. LB.        25707. LB.
                                   PER SEASON                      WALLEYE               42835. LB.         3570. LB.
  COSTS                                                            JACKFISH               8639. LB.          720. LB.
   INTEREST           $       38.59                                ROUGH FISH                0. LB.            0. LB.
   DEPRECIATION              482.43                                TOTAL                235494. LB.        19624. LB.
   EQUIPMENT + REPAIR        463.00
   FUEL COSTS                181.52
   HIRED LABOUR              656.67
   FOOD COSTS                175.33                              LAKESIDE CULLAGE        8410. LB.
   TRAVEL TO OUTER LAKES       0.00
   LICENCE                    10.00                              POTENTIAL GROSS INCOME WITHOUT LAKESIDE CULLAGE   61270.37
   OTHER                     373.25
   TOTAL                    2380.30                              GROSS INCOME WITH LAKESIDE CULLAGE                42889.28

                             NET INCOME WITH LAKESIDE CULLAGE                      14319.67
                   POTENTIAL NET INCOME WITHOUT LAKESIDE CULLAGE                   32700.76

                 AVERAGE GROSS INCOME WITH LAKESIDE CULLAGE PER FISHERMAN      1787.05
       POTENTIAL AVERAGE GROSS INCOME ZERO LAKESIDE CULLAGE PER FISHERMAN      2552.93
                 AVERAGE NET   INCOME WITH LAKESIDE CULLAGE PER FISHERMAN       596.65
       POTENTIAL AVERAGE NET   INCOME ZERO LAKESIDE CULLAGE PER FISHERMAN      1362.53

                      NUMBER OF ENTERPRISES IN GROUP   12.
```

TABLE 3 FISHING ENTERPRISE 1

```
SUMMER  SEASON

NUMBER OF LIKE ENTERPRISES   3

  FISHING EQUIPMENT                                                   CATCH INFORMATION
   YAWL BOAT            1460.00    ESTIMATED MARKET VALUE      CATCH BY SPECIES AND SIZE      GROUP TOTAL     GROUP AVERAGE
   NO. OF NETS      9.  TOTAL LENGTH      930.  YARDS                WHITEFISH   JUMBO         324. LB.
                                                                                 LARGE        1067. LB.
  FISHING EFFORT                                                                 MEDIUM      14361. LB.
   NO. OF LIFT/DAYS   0.861      DAYS FISHED  46.                                SMALL         571. LB.
   DISTANCE TRAVELLED/DAY          9.  MILES                                 SUB-TOTAL       16322. LB.
                                      PER SEASON                     WALLEYE                  2266. LB.
  COSTS                                                              JACKFISH                  457. LB.
   INTEREST             $       60.93                                ROUGH FISH                  0. LB.
   DEPRECIATION                761.51                                TOTAL                   19046. LB.
   EQUIPMENT + REPAIR          100.00
   FUEL COSTS                  138.62
   HIRED LABOUR                230.00
   FOOD COSTS                  122.92                              LAKESIDE CULLAGE         8163. LB.
   TRAVEL TO OUTER LAKES         0.00
   LICENCE                      10.00                              POTENTIAL GROSS INCOME WITHOUT LAKESIDE CULLAGE    4853.34
   OTHER                        20.00
   TOTAL                      1443.98                              GROSS INCOME WITH LAKESIDE CULLAGE                 3397.34

                                 NET INCOME WITH LAKESIDE CULLAGE                      1953.36
                                 NET INCOME WITH LAKESIDE CULLAGE PER PARTNER          1953.36
                      POTENTIAL NET INCOME WITHOUT LAKESIDE CULLAGE                    3409.35
                      POTENTIAL NET INCOME WITHOUT LAKESIDE CULLAGE PER PARTNER        3409.35
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TABLE 3 FISHING ENTERPRISE 2

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SUMMER  SEASON

NUMBER OF LIKE ENTERPRISES   3

  FISHING EQUIPMENT                                          CATCH INFORMATION
   YAWL BOAT             795.00    ESTIMATED MARKET VALUE    CATCH BY SPECIES AND SIZE     GROUP TOTAL     GROUP AVERAGE
   NO. OF NETS    9.  TOTAL LENGTH     870.  YARDS               WHITEFISH   JUMBO           438. LB.
                                                                             LARGE          1443. LB.
  FISHING EFFORT                                                             MEDIUM        19423. LB.
   NO. OF LIFT/DAYS   0.830     DAYS FISHED  74.                             SMALL           773. LB.
   DISTANCE TRAVELLED/DAY      20.  MILES                                SUB-TOTAL         22077. LB.
                                     PER SEASON                  WALLEYE                    3065. LB.
  COSTS                                                          JACKFISH                    618. LB.
   INTEREST            $      61.85                              ROUGH FISH                    0. LB.
   DEPRECIATION              773.12                              TOTAL                     25760. LB.
   EQUIPMENT + REPAIR         50.00
   FUEL COSTS                614.20
   HIRED LABOUR                0.00
   FOOD COSTS                  0.00                          LAKESIDE CULLAGE          11040. LB.
   TRAVEL TO OUTER LAKES       0.00
   LICENCE                    10.00                          POTENTIAL GROSS INCOME WITHOUT LAKESIDE CULLAGE    6564.27
   OTHER                      21.05
   TOTAL                    1530.21                          GROSS INCOME WITH LAKESIDE CULLAGE                 4594.99

                          NET INCOME WITH LAKESIDE CULLAGE                  3064.78
                          NET INCOME WITH LAKESIDE CULLAGE PER PARTNER      3064.78
               POTENTIAL NET INCOME WITHOUT LAKESIDE CULLAGE                5034.05
               POTENTIAL NET INCOME WITHOUT LAKESIDE CULLAGE PER PARTNER    5034.05
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                                          TABLE 3 FISHING ENTERPRISE  3
SUMMER  SEASON
NUMBER OF LIKE ENTERPRISES   3
                                                              CATCH INFORMATION
  FISHING EQUIPMENT                                      CATCH BY SPECIES AND SIZE     GROUP TOTAL     GROUP AVERAGE
   YAWL BOAT              145.00    ESTIMATED MARKET VALUE       WHITEFISH   JUMBO         42. LB.
   NO. OF NETS     6.  TOTAL LENGTH     550.  YARDS                          LARGE        139. LB.
                                                                             MEDIUM      1863. LB.
  FISHING EFFORT                                                             SMALL         74. LB.
   NO. OF LIFT/DAYS   1.000     DAYS FISHED   9.                         SUB-TOTAL       2117. LB.
   DISTANCE TRAVELLED/DAY       44.  MILES                       WALLEYE                  294. LB.
                                    PER SEASON                   JACKFISH                  59. LB.
  COSTS                                                          ROUGH FISH                 0. LB.
    INTEREST           $       21.42                             TOTAL                   2471. LB.
    DEPRECIATION              267.77
    EQUIPMENT + REPAIR          0.00
    FUEL COSTS                 45.00
    HIRED LABOUR                0.00                        LAKESIDE CULLAGE        1059. LB.
    FOOD COSTS                  0.00
    TRAVEL TO OUTER LAKES       0.00                        POTENTIAL GROSS INCOME WITHOUT LAKESIDE CULLAGE      629.60
    LICENCE                    10.00
    OTHER                      20.00                        GROSS INCOME WITH LAKESIDE CULLAGE                   440.72
    TOTAL                     364.19

                              NET INCOME WITH LAKESIDE CULLAGE                   76.54
                              NET INCOME WITH LAKESIDE CULLAGE PER PARTNER       76.54
                   POTENTIAL NET INCOME WITHOUT LAKESIDE CULLAGE                265.42
                   POTENTIAL NET INCOME WITHOUT LAKESIDE CULLAGE PER PARTNER    265.42
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                                          TABLE 3 FISHING ENTERPRISE  4
SUMMER  SEASON

NUMBER OF LIKE ENTERPRISES   3

  FISHING EQUIPMENT                                                  CATCH INFORMATION
   YAWL BOAT            400.00    ESTIMATED MARKET VALUE       CATCH BY SPECIES AND SIZE      GROUP TOTAL      GROUP AVERAGE
   NO. OF NETS   10.  TOTAL LENGTH    1010.  YARDS                  WHITEFISH   JUMBO          175. LB.
                                                                                LARGE          576. LB.
  FISHING EFFORT                                                                MEDIUM        7749. LB.
   NO. OF LIFT/DAYS   0.810      DAYS FISHED  32.                               SMALL          308. LB.
   DISTANCE TRAVELLED/DAY         0.  MILES                                  SUB-TOTAL        8808. LB.
                                     PER SEASON                    WALLEYE                    1223. LB.
  COSTS                                                            JACKFISH                    247. LB.
   INTEREST           $        39.21                               ROUGH FISH                    0. LB.
   DEPRECIATION               490.08                               TOTAL                     10278. LB.
   EQUIPMENT + REPAIR           0.00
   FUEL COSTS                 129.60
   HIRED LABOUR                 0.00
   FOOD COSTS                   0.00                              LAKESIDE CULLAGE           4405. LB.
   TRAVEL TO OUTER LAKES        0.00
   LICENCE                     10.00                              POTENTIAL GROSS INCOME WITHOUT LAKESIDE CULLAGE     2619.01
   OTHER                       22.10
   TOTAL                      690.98                              GROSS INCOME WITH LAKESIDE CULLAGE                  1833.31

                                NET INCOME WITH LAKESIDE CULLAGE                   1142.32
                                NET INCOME WITH LAKESIDE CULLAGE PER PARTNER       1142.32
                    POTENTIAL NET INCOME WITHOUT LAKESIDE CULLAGE                  1928.03
                    POTENTIAL NET INCOME WITHOUT LAKESIDE CULLAGE PER PARTNER      1928.03
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                                             TABLE 3 FISHING ENTERPRISE  5
SUMMER  SEASON

NUMBER OF LIKE ENTERPRISES   3

  FISHING EQUIPMENT                                                  CATCH INFORMATION
   YAWL BOAT              550.00    ESTIMATED MARKET VALUE      CATCH BY SPECIES AND SIZE      GROUP TOTAL     GROUP AVERAGE
   NO. OF NETS   11.  TOTAL LENGTH    1100.  YARDS                       WHITEFISH   JUMBO         204. LB.
                                                                                     LARGE         671. LB.
  FISHING EFFORT                                                                    MEDIUM        9034. LB.
   NO. OF LIFT/DAYS   0.860      DAYS FISHED  31.                                    SMALL         359. LB.
   DISTANCE TRAVELLED/DAY        0.  MILES                                       SUB-TOTAL       10269. LB.
                                   PER SEASON                           WALLEYE                   1426. LB.
  COSTS                                                                 JACKFISH                   288. LB.
   INTEREST           $      45.86                                      ROUGH FISH                   0. LB.
   DEPRECIATION             573.25                                      TOTAL                    11982. LB.
   EQUIPMENT + REPAIR         0.00
   FUEL COSTS                93.31
   HIRED LABOUR               0.00
   FOOD COSTS                 0.00                                 LAKESIDE CULLAGE            5135. LB.
   TRAVEL TO OUTER LAKES      0.00
   LICENCE                   10.00                                 POTENTIAL GROSS INCOME WITHOUT LAKESIDE CULLAGE    3053.27
   OTHER                     21.05
   TOTAL                    743.47                                 GROSS INCOME WITH LAKESIDE CULLAGE                 2137.29

                              NET INCOME WITH LAKESIDE CULLAGE                         1393.82
                              NET INCOME WITH LAKESIDE CULLAGE PER PARTNER             1393.82
                    POTENTIAL NET INCOME WITHOUT LAKESIDE CULLAGE                      2309.79
                    POTENTIAL NET INCOME WITHOUT LAKESIDE CULLAGE PER PARTNER          2309.79
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                                                  TABLE 3 FISHING ENTERPRISE  6
     SEASON

     OF LIKE ENTERPRISES   3

FISHING FCUIPMENT                                              CATCH INFCRMATICN
 YAWL ROAT              750.00    FSTIMATFC MARKET VALUE    CATCH BY SPECIFS AND SIZF     GROUP TOTAL     GROUP AVERAGE
 NO. OF NETS     7.  TOTAL LENGTH      740.  YARDS               WHITEFISH   JUMBO          253. LB.
                                                                             LARGE          834. LB.
FISHING EFFORT                                                               MEDIUM       11224. LB.
 NO. OF LIFT/DAYS   0.735     DAYS FISHED  44.                               SMALL          447. LB.
 DISTANCE TRAVELLFD/DAY        18.  MILES                                 SUB-TOTAL       12757. LB.
                                  PER SEASON                     WALLEYE                   1771. LB.
CCSTS                                                            JACKFISH                   357. LB.
 INTEREST              $       50.10                             ROUGH FISH                   0. LB.
 CFPRECIATION                 626.29                             TOTAL                    14885. LB.
 FCUIPMENT + REPAIR             0.30
 FUEL COSTS                   161.70
 HIRED LABOUR                   0.00
 FOCD CCSTS                     0.00                           LAKESIDE CULLAGE            6379. LB.
 TRAVEL TO OUTER LAKES          0.00
 LICENCE                       10.00                           POTENTIAL GRCSS INCOME WITHOUT LAKESIDE CULLAGE    3793.14
 CTHER                         20.00
 TOTAL                        868.09                           GROSS INCOME WITH LAKESIDE CULLAGE                 2655.20

                               NET INCCME WITH LAKESIDE CULLAGE                   1787.10
                               NET INCCME WITH LAKESICE CULLAGE PER PARTNER       1787.10
                   POTENTIAL NET INCOME WITHCUT LAKESICE CULLAGE                  2925.05
                   POTENTIAL NET INCOME WITHOUT LAKESIDE CULLAGE PER PARTNER      2925.05
 SUMMER  SEASON                                          TABLE 3 FISHING ENTERPRISE  7

 NUMBER OF LIKE ENTERPRISES   3

   FISHING EQUIPMENT                                                    CATCH INFORMATION
    YAWL BOAT              200.00    ESTIMATED MARKET VALUE      CATCH BY SPECIES AND SIZE       GROUP TOTAL      GROUP AVERAGE
    NO. OF NETS     7.   TOTAL LENGTH      650.  YARDS                 WHITEFISH   JUMBO          123. LB.
                                                                                   LARGE          406. LB.
   FISHING EFFORT                                                                  MEDIUM        5461. LB.
    NO. OF LIFT/DAYS    0.917      DAYS FISHED  21.                                SMALL          217. LB.
    DISTANCE TRAVELLED/DAY          3.  MILES                                   SUB-TOTAL        6207. LB.
                                        PER SEASON                      WALLEYE                   862. LB.
   COSTS                                                                JACKFISH                  174. LB.
    INTEREST            $         59.03                                 ROUGH FISH                  0. LB.
    DEPRECIATION                 737.84                                 TOTAL                    7243. LB.
    EQUIPMENT + REPAIR            75.00
    FUEL COSTS                    48.14
    HIRED LABOUR                   0.00
    FOOD COSTS                     0.00                              LAKESIDE CULLAGE            3104. LB.
    TRAVEL TO OUTER LAKES          0.00
    LICENCE                       10.00                              POTENTIAL GROSS INCOME WITHOUT LAKESIDE CULLAGE    1845.58
    OTHER                         20.00
    TOTAL                        950.01                              GROSS INCOME WITH LAKESIDE CULLAGE                 1291.91

                               NET INCOME WITH LAKESIDE CULLAGE                           341.90
                               NET INCOME WITH LAKESIDE CULLAGE PER PARTNER               341.90
                  POTENTIAL NET INCOME WITHOUT LAKESIDE CULLAGE                           895.58
                  POTENTIAL NET INCOME WITHOUT LAKESIDE CULLAGE PER PARTNER               895.58
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SUMMER  SEASON                               TABLE 3 FISHING ENTERPRISE  8

NUMBER OF LIKE ENTERPRISES   3

  FISHING EQUIPMENT                                            CATCH INFORMATION
   YAWL BOAT            550.00    ESTIMATED MARKET VALUE     CATCH BY SPECIES AND SIZE      GROUP TOTAL      GROUP AVERAGE
   NO. OF NETS     6.  TOTAL LENGTH      620.  YARDS               WHITEFISH   JUMBO         166. LB.
                                                                               LARGE         547. LB.
  FISHING EFFORT                                                               MEDIUM       7360. LB.
   NO. OF LIFT/DAYS    0.893     DAYS FISHED  28.                              SMALL         293. LB.
   DISTANCE TRAVELLED/DAY       13.  MILES                                 SUB-TOTAL        8365. LB.
                                      PER SEASON                  WALLEYE                   1162. LB.
  COSTS                                                           JACKFISH                   234. LB.
   INTEREST           $        52.27                              ROUGH FISH                   0. LB.
   DEPRECIATION               653.34                              TOTAL                     9761. LB.
   EQUIPMENT + REPAIR           0.00
   FUEL COSTS                  87.51
   HIRED LABOUR                 0.00
   FOOD COSTS                   0.00                            LAKESIDE CULLAGE            4183. LB.
   TRAVEL TO OUTER LAKES        0.00
   LICENCE                     10.00                            POTENTIAL GROSS INCOME WITHOUT LAKESIDE CULLAGE    2487.38
   OTHER                       27.10
   TOTAL                      825.22                            GROSS INCOME WITH LAKESIDE CULLAGE                 1741.17

                               NET INCOME WITH LAKESIDE CULLAGE                   915.95
                               NET INCOME WITH LAKESIDE CULLAGE PER PARTNER       915.95
                   POTENTIAL NET INCOME WITHOUT LAKESIDE CULLAGE                 1662.17
                   POTENTIAL NET INCOME WITHOUT LAKESIDE CULLAGE PER PARTNER     1662.17
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TABLE 4 SUMMARY FISHING ENTERPRISE TYPE SINGLE OPERATION

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SUMMER  SEASON

  FISHING EQUIPMENT                                              CATCH INFORMATION
   YAWL BOAT            606.25    ESTIMATED MARKET VALUE     CATCH BY SPECIES AND SIZE      GROUP TOTAL      GROUP AVERAGE
   NO. OF NETS     8.  TOTAL LENGTH      809.  YARDS                WHITEFISH    JUMBO      5173. LB.            216. LB.
                                                                                 LARGE     17040. LB.            710. LB.
  FISHING EFFORT                                                                MEDIUM    229426. LB.           9559. LB.
   NO. OF LIFT/DAYS   0.839     DAYS FISHED  36.                                 SMALL      9128. LB.            380. LB.
   DISTANCE TRAVELLED/DAY        13.  MILES                                  SUB-TOTAL    260767. LB.          10865. LB.
                                  PER SEASON                      WALLEYE                  36209. LB.           1509. LB.
  COSTS                                                           JACKFISH                  7303. LB.            304. LB.
   INTEREST          $        48.83                               ROUGH FISH                   0. LB.              0. LB.
   DEPRECIATION              610.41                               TOTAL                   304279. LB.          12678. LB.
   EQUIPMENT + REPAIR         28.13
   FUEL COSTS                164.76
   HIRED LABOUR               28.75
   FOOD COSTS                 15.35                             LAKESIDE CU[illegible]AGE          5434. LB.
   TRAVEL TO OUTER LAKES       0.00
   LICENCE                    10.00                             POTENTIAL G[illegible]COME WITHOUT LAKESIDE CULLAGE    77536.69
   OTHER                      20.79
   TOTAL                     927.02                             GROSS INCO[illegible]LAKESIDE CULLAGE                  54275.74

                           NET INCOME WITH LAKESIDE CULLAGE                      [illegible].28
                 POTENTIAL NET INCOME WITHOUT LAKESIDE CULLAGE                   [illegible]

              AVERAGE GROSS INCOME WITH LAKESIDE CULLAGE PER FISHERMAN      2261.49
    POTENTIAL AVERAGE GROSS INCOME ZERO LAKESIDE CULLAGE PER FISHERMAN      3230.70
              AVERAGE NET   INCOME WITH LAKESIDE CULLAGE PER FISHERMAN      1334.47
    POTENTIAL AVERAGE NET   INCOME ZERO LAKESIDE CULLAGE PER FISHERMAN      2303.68

                    NUMBER OF ENTERPRISES IN GROUP   24.
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ER  SEASON                                          TABLE 3 FISHING ENTERPRISE  9

BER OF LIKE ENTERPRISES    3

  FISHING EQUIPMENT
   YAWL BOAT             800.00    ESTIMATED MARKET VALUE        CATCH INFORMATION
   NO. OF NETS   10.  TOTAL LENGTH    1020.  YARDS            CATCH BY SPECIES AND SIZE       GROUP TOTAL     GROUP AVERAGE
                                                                WHITEFISH    JUMBO             188. LB.
  FISHING EFFORT                                                             LARGE             619. LB.
   NO. OF LIFT/DAYS   1.000      DAYS FISHED  23.                            MEDIUM           8337. LB.
   DISTANCE TRAVELLED/DAY        19.  MILES                                  SMALL             332. LB.
                                     PER SEASON                           SUB-TOTAL           9476. LB.
  COSTS                                                         WALLEYE                       1316. LB.
   INTEREST            $       70.90                            JACKFISH                       265. LB.
   DEPRECIATION               886.19                            ROUGH FISH                       0. LB.
   EQUIPMENT + REPAIR          50.00                            TOTAL                        11057. LB.
   FUEL COSTS                  69.00
   HIRED LABOUR                 0.00
   FOOD COSTS                   0.00
   TRAVEL TO OUTER LAKES        0.00                           LAKESIDE CULLAGE              4739. LB.
   LICENCE                     10.00
   OTHER                       21.05                           POTENTIAL GROSS INCOME WITHOUT LAKESIDE CULLAGE      2817.62
   TOTAL                     1107.14
                                                               GROSS INCOME WITH LAKESIDE CULLAGE                   1972.34
                              NET INCOME WITH LAKESIDE CULLAGE                      865.20
                              NET INCOME WITH LAKESIDE CULLAGE PER PARTNER          432.60
                    POTENTIAL NET INCOME WITHOUT LAKESIDE CULLAGE                  1710.48
                    POTENTIAL NET INCOME WITHOUT LAKESIDE CULLAGE PER PARTNER       855.24
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                                        TABLE 3 FISHING ENTERPRISE 10
SUMMER  SEASON

NUMBER OF LIKE ENTERPRISES   3

  FISHING EQUIPMENT                                               CATCH INFORMATION
   YAWL BOAT           145.00   ESTIMATED MARKET VALUE      CATCH BY SPECIES AND SIZE      GROUP TOTAL      GROUP AVERAGE
   NO. OF NETS    9.  TOTAL LENGTH     890.  YARDS                 WHITEFISH   JUMBO          281. LB.
                                                                               LARGE          925. LB.
  FISHING EFFORT                                                               MEDIUM       12459. LB.
   NO. OF LIFT/DAYS   0.844     DAYS FISHED  43.                               SMALL          496. LB.
   DISTANCE TRAVELLED/DAY       2.  MILES                                  SUB-TOTAL        14161. LB.
                                   PER SEASON                      WALLEYE                   1966. LB.
  COSTS                                                            JACKFISH                   397. LB.
   INTEREST           $      32.92                                 ROUGH FISH                   0. LB.
   DEPRECIATION             410.26                                 TOTAL                    16524. LB.
   EQUIPMENT + REPAIR         0.00
   FUEL COSTS                90.73
   HIRED LABOUR               0.00
   FOOD COSTS                 0.00                               LAKESIDE CULLAGE            7082. LB.
   TRAVEL TO OUTER LAKES      0.00
   LICENCE                   10.00                               POTENTIAL GROSS INCOME WITHOUT LAKESIDE CULLAGE    4210.69
   OTHER                     20.00
   TOTAL                    563.81                               GROSS INCOME WITH LAKESIDE CULLAGE                 2947.49

                        NET INCOME WITH LAKESIDE CULLAGE                         2383.68
                        NET INCOME WITH LAKESIDE CULLAGE PER PARTNER             1191.84
               POTENTIAL NET INCOME WITHOUT LAKESIDE CULLAGE                     3646.88
               POTENTIAL NET INCOME WITHOUT LAKESIDE CULLAGE PER PARTNER         1823.44
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SUMMER  SEASON                                   TABLE 3 FISHING ENTERPRISE 11

NUMBER OF LIKE ENTERPRISES    3

  FISHING EQUIPMENT                                              CATCH INFORMATION
   YAWL BOAT               725.00    ESTIMATED MARKET VALUE   CATCH BY SPECIES AND SIZE    GROUP TOTAL     GROUP AVERAGE
   NO. OF NETS     7.  TOTAL LENGTH      740.  YARDS               WHITEFISH   JUMBO          184. LB.
                                                                               LARGE          605. LB.
  FISHING EFFORT                                                               MEDIUM        8151. LB.
   NO. OF LIFT/DAYS   0.850     DAYS FISHED  29.                               SMALL          324. LB.
   DISTANCE TRAVELLED/DAY       17.  MILES                                 SUB-TOTAL         9265. LB.
                                     PER SEASON                    WALLEYE                   1286. LB.
  COSTS                                                            JACKFISH                   259. LB.
   INTEREST            $       35.87                               ROUGH FISH                   0. LB.
   DEPRECIATION               448.43                               TOTAL                    10811. LB.
   EQUIPMENT + REPAIR           0.00
   FUEL COSTS                 123.25
   HIRED LABOUR                 0.00
   FOOD COSTS                   0.00                             LAKESIDE CULLAGE         4633. LB.
   TRAVEL TO OUTER LAKES        0.00
   LICENCE                     10.00                             POTENTIAL GROSS INCOME WITHOUT LAKESIDE CULLAGE    2754.76
   OTHER                       22.10
   TOTAL                      639.65                             GROSS INCOME WITH LAKESIDE CULLAGE                 1928.33

                               NET INCOME WITH LAKESIDE CULLAGE                  1288.68
                               NET INCOME WITH LAKESIDE CULLAGE PER PARTNER       644.34
                     POTENTIAL NET INCOME WITHOUT LAKESIDE CULLAGE               2115.11
                     POTENTIAL NET INCOME WITHOUT LAKESIDE CULLAGE PER PARTNER   1057.55
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SUMMER  SEASON                                   TABLE 3 FISHING ENTERPRISE 12

NUMBER OF LIKE ENTERPRISES   3

  FISHING EQUIPMENT                                                CATCH INFORMATION
   YAWL BOAT              900.00    ESTIMATED MARKET VALUE      CATCH BY SPECIES AND SIZE     GROUP TOTAL     GROUP AVERAGE
   NO. OF NETS   11.  TOTAL LENGTH     1120.  YARDS                 WHITEFISH   JUMBO          275. LB.
                                                                                LARGE          907. LB.
  FISHING EFFORT                                                                MEDIUM       12208. LB.
   NO. OF LIFT/DAYS   0.861     DAYS FISHED  39.                                SMALL          486. LB.
   DISTANCE TRAVELLED/DAY       22.  MILES                                  SUB-TOTAL        13876. LB.
                                      PER SEASON                    WALLEYE                   1927. LB.
  COSTS                                                             JACKFISH                   389. LB.
   INTEREST            $        42.60                               ROUGH FISH                   0. LB.
   DEPRECIATION                532.51                               TOTAL                    16191. LB.
   EQUIPMENT + REPAIR            0.00                                                             -
   FUEL COSTS                  167.89                                                             .
   HIRED LABOUR                  0.00
   FOOD COSTS                    0.00                              LAKESIDE CULLAGE           6939. LB.
   TRAVEL TO OUTER LAKES         0.00
   LICENCE                      10.00                              POTENTIAL GROSS INCOME WITHOUT LAKESIDE CULLAGE    4125.83
   OTHER                        22.10
   TOTAL                       775.10                              GROSS INCOME WITH LAKESIDE CULLAGE                  2888.08

                                  NET INCOME WITH LAKESIDE CULLAGE                        2112.98
                                  NET INCOME WITH LAKESIDE CULLAGE PER PARTNER            1056.49
                    POTENTIAL NET INCOME WITHOUT LAKESIDE CULLAGE                         3350.73
                    POTENTIAL NET INCOME WITHOUT LAKESIDE CULLAGE PER PARTNER             1675.36
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SUMMER  SEASON                                       TABLE 3 FISHING ENTERPRISE 13

NUMBER OF LIKE ENTERPRISES   3

  FISHING EQUIPMENT                                                CATCH INFORMATION
   YAWL BOAT            1000.00    ESTIMATED MARKET VALUE       CATCH BY SPECIES AND SIZE      GROUP TOTAL      GROUP AVERAGE
   NO. OF NETS   11.   TOTAL LENGTH    1080.  YARDS                 WHITEFISH    JUMBO            542. LB.
                                                                                 LARGE           1787. LB.
  FISHING EFFORT                                                                 MEDIUM         24055. LB.
   NO. OF LIFT/DAYS   0.878      DAYS FISHED  60.                                SMALL            957. LB.
   DISTANCE TRAVELLED/DAY        45.  MILES                                  SUB-TOTAL          27341. LB.
                                      PER SEASON                    WALLEYE                      3797. LB.
  COSTS                                                             JACKFISH                      766. LB.
   INTEREST            $       65.03                                ROUGH FISH                      0. LB.
   DEPRECIATION               812.82                                TOTAL                       31904. LB.
   EQUIPMENT + REPAIR           0.00
   FUEL COSTS                 474.12
   HIRED LABOUR                 0.00
   FOOD COSTS                   0.00                              LAKESIDE CULLAGE            13673. LB.
   TRAVEL TO OUTER LAKES        0.00
   LICENCE                     10.00                              POTENTIAL GROSS INCOME WITHOUT LAKESIDE CULLAGE    8129.71
   OTHER                       24.20
   TOTAL                     1386.17                              GROSS INCOME WITH LAKESIDE CULLAGE                 5690.79

                                NET INCOME WITH LAKESIDE CULLAGE                         4304.62
                                NET INCOME WITH LAKESIDE CULLAGE PER PARTNER             2152.31
                      POTENTIAL NET INCOME WITHOUT LAKESIDE CULLAGE                      6743.54
                      POTENTIAL NET INCOME WITHOUT LAKESIDE CULLAGE PER PARTNER          3371.77
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                                         TABLE 3 FISHING ENTERPRISE 14
SUMMER  SEASON

NUMBER OF LIKE ENTERPRISES   3

  FISHING EQUIPMENT                                               CATCH INFORMATION
   YAWL BOAT            795.00    ESTIMATED MARKET VALUE      CATCH BY SPECIES AND SIZE      GROUP TOTAL      GROUP AVERAGE
   NO. OF NETS   12.  TOTAL LENGTH    1240.  YARDS                WHITEFISH   JUMBO            258. LB.
                                                                              LARGE            849. LB.
  FISHING EFFORT                                                              MEDIUM         11433. LB.
   NO. OF LIFT/DAYS   0.830      DAYS FISHED  32.                             SMALL            455. LB.
   DISTANCE TRAVELLED/DAY        7.  MILES                                SUB-TOTAL          12994. LB.
                                    PER SEASON                    WALLEYE                     1804. LB.
  COSTS                                                           JACKFISH                     364. LB.
   INTEREST           $      53.15                                ROUGH FISH                     0. LB.
   DEPRECIATION             664.42                                TOTAL                      15163. LB.
   EQUIPMENT + REPAIR        20.00
   FUEL COSTS               132.80
   HIRED LABOUR               0.00
   FOOD COSTS                 0.00                              LAKESIDE CULLAGE            6498. LB.
   TRAVEL TO OUTER LAKES      0.00
   LICENCE                   10.00                              POTENTIAL GROSS INCOME WITHOUT LAKESIDE CULLAGE     3863.75
   OTHER                     22.10
   TOTAL                    902.48                              GROSS INCOME WITH LAKESIDE CULLAGE                  2704.62

                               NET INCOME WITH LAKESIDE CULLAGE                    1802.15
                               NET INCOME WITH LAKESIDE CULLAGE PER PARTNER         901.07
                     POTENTIAL NET INCOME WITHOUT LAKESIDE CULLAGE                 2961.27
                     POTENTIAL NET INCOME WITHOUT LAKESIDE CULLAGE PER PARTNER     1480.64
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                                        TABLE 3 FISHING ENTERPRISE 15
SUMMER  SEASON

NUMBER OF LIKE ENTERPRISES   3

  FISHING EQUIPMENT                                                 CATCH INFORMATION
   YAWL BOAT              800.00    ESTIMATED MARKET VALUE     CATCH BY SPECIES AND SIZE     GROUP TOTAL      GROUP AVERAGE
   NO. OF NETS   14.   TOTAL LENGTH    1440.  YARDS                  WHITEFISH   JUMBO          179. LB.
                                                                                LARGE          589. LB.
  FISHING EFFORT                                                                MEDIUM        7934. LB.
   NO. OF LIFT/DAYS   1.000      DAYS FISHED  20.                               SMALL          316. LB.
   DISTANCE TRAVELLED/DAY        9.  MILES                                  SUB-TOTAL         9017. LB.
                                    PER SEASON                       WALLEYE                  1252. LB.
  COSTS                                                              JACKFISH                  253. LB.
   INTEREST            $       56.63                                 ROUGH FISH                  0. LB.
   DEPRECIATION               707.84                                 TOTAL                   10522. LB.
   EQUIPMENT + REPAIR           0.00
   FUEL COSTS                  50.00
   HIRED LABOUR                 0.00
   FOOD COSTS                   0.00                               LAKESIDE CULLAGE           4509. LB.
   TRAVEL TO OUTER LAKES        0.00
   LICENCE                     10.00                               POTENTIAL GROSS INCOME WITHOUT LAKESIDE CULLAGE    2681.25
   OTHER                       21.05
   TOTAL                      845.52                               GROSS INCOME WITH LAKESIDE CULLAGE                 1876.87

                               NET INCOME WITH LAKESIDE CULLAGE                     1031.35
                               NET INCOME WITH LAKESIDE CULLAGE PER PARTNER          515.68
                     POTENTIAL NET INCOME WITHOUT LAKESIDE CULLAGE                  1835.73
                     POTENTIAL NET INCOME WITHOUT LAKESIDE CULLAGE PER PARTNER       917.86
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SUMMER  SEASON                                  TABLE 3 FISHING ENTERPRISE 16

NUMBER OF LIKE ENTERPRISES   3

  FISHING EQUIPMENT                                                      CATCH INFORMATION
   YAWL BOAT              780.00    ESTIMATED MARKET VALUE       CATCH BY SPECIES AND SIZE      GROUP TOTAL      GROUP AVERAGE
   NO. OF NETS     9.  TOTAL LENGTH     880.  YARDS                   WHITEFISH   JUMBO           431. LB.
                                                                                  LARGE          1419. LB.
  FISHING EFFORT                                                                  MEDIUM        19099. LB.
   NO. OF LIFT/DAYS   0.784      DAYS FISHED  59.                                 SMALL           760. LB.
   DISTANCE TRAVELLED/DAY          5.  MILES                                  SUB-TOTAL         21708. LB.
                                       PER SEASON                     WALLEYE                    3014. LB.
  COSTS                                                               JACKFISH                    608. LB.
   INTEREST              $       61.51                                ROUGH FISH                    0. LB.
   DEPRECIATION                 768.98                                TOTAL                     25331. LB.
   EQUIPMENT + REPAIR             0.00
   FUEL COSTS                   115.64
   HIRED LABOUR                   0.00
   FOOD COSTS                     0.00                              LAKESIDE CULLAGE            10856. LB.
   TRAVEL TO OUTER LAKES          0.00
   LICENCE                       10.00                              POTENTIAL GROSS INCOME WITHOUT LAKESIDE CULLAGE    6454.81
   OTHER                         21.05
   TOTAL                        977.08                              GROSS INCOME WITH LAKESIDE CULLAGE                 4518.37

                               NET INCOME WITH LAKESIDE CULLAGE                            3541.28
                               NET INCOME WITH LAKESIDE CULLAGE PER PARTNER                1770.64
                     POTENTIAL NET INCOME WITHOUT LAKESIDE CULLAGE                         5477.72
                     POTENTIAL NET INCOME WITHOUT LAKESIDE CULLAGE PER PARTNER             2738.86
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                                                TABLE 3 FISHING ENTERPRISE 17
SUMMER  SEASON

NUMBER OF LIKE ENTERPRISES   3

  FISHING EQUIPMENT                                          CATCH INFORMATION
   YAWL BOAT             90.00    ESTIMATED MARKET VALUE    CATCH BY SPECIES AND SIZE     GROUP TOTAL     GROUP AVERAGE
   NO. OF NETS   11.  TOTAL LENGTH    1140.  YARDS              WHITEFISH   JUMBO          246. LB.
                                                                            LARGE          811. LB.
  FISHING EFFORT                                                            MEDIUM       10926. LB.
   NO. OF LIFT/DAYS   0.740     DAYS FISHED  36.                            SMALL          435. LB.
   DISTANCE TRAVELLED/DAY       25.  MILES                              SUB-TOTAL        12419. LB.
                                   PER SEASON                   WALLEYE                   1724. LB.
  COSTS                                                         JACKFISH                   348. LB.
   INTEREST          $      35.79                               ROUGH FISH                   0. LB.
   DEPRECIATION            447.38                               TOTAL                    14491. LB.
   EQUIPMENT + REPAIR        0.00
   FUEL COSTS              133.20
   HIRED LABOUR              0.00
   FOOD COSTS                0.00                           LAKESIDE CULLAGE          6210. LB.
   TRAVEL TO OUTER LAKES     0.00
   LICENCE                  10.00                           POTENTIAL GROSS INCOME WITHOUT LAKESIDE CULLAGE     3692.63
   OTHER                    22.10
   TOTAL                   648.47                           GROSS INCOME WITH LAKESIDE CULLAGE                  2584.84

                           NET INCOME WITH LAKESIDE CULLAGE                  1936.37
                           NET INCOME WITH LAKESIDE CULLAGE PER PARTNER       968.18
                POTENTIAL NET INCOME WITHOUT LAKESIDE CULLAGE                3044.16
                POTENTIAL NET INCOME WITHOUT LAKESIDE CULLAGE PER PARTNER    1522.08
```

TABLE 4 SUMMARY FISHING ENTERPRISE TYPE PARTNERSHIP(2)

```
SUMMER  SEASON

  FISHING EQUIPMENT                                                 CATCH INFORMATION
  YAWL BOAT             670.56    ESTIMATED MARKET VALUE      CATCH BY SPECIES AND SIZE      GROUP TOTAL        GROUP AVERAGE
  NO. OF NETS    11.  TOTAL LENGTH     1061.  YARDS                WHITEFISH    JUMBO         12924. LB.            479. LB.
                                                                                LARGE         42574. LB.           1577. LB.
  FISHING EFFORT                                                               MEDIUM        573234. LB.          21231. LB.
   NO. OF LIFT/DAYS   0.849      DAYS FISHED  38.                               SMALL         22808. LB.            845. LB.
   DISTANCE TRAVELLED/DAY        17.  MILES                                 SUB-TOTAL        651541. LB.          24131. LB.
                                        PER SEASON                 WALLEYE                    90471. LB.           3351. LB.
  COSTS                                                            JACKFISH                   18246. LB.            676. LB.
   INTEREST           $         50.48                              ROUGH FISH                     0. LB.              0. LB.
   DEPRECIATION                630.97                              TOTAL                     455979. LB.          16888. LB.
   EQUIPMENT + REPAIR            7.78
   FUEL COSTS                  150.74
   HIRED LABOUR                  0.00
   FOOD COSTS                    0.00                            LAKESIDE CULLAGE           7238. LB.
   TRAVEL TO OUTER LAKES         0.00
   LICENCE                      10.00                            POTENTIAL GROSS INCOME WITHOUT LAKESIDE CULLAGE  116192.90
   OTHER                        21.75
   TOTAL                       871.71                            GROSS INCOME WITH LAKESIDE CULLAGE                 81335.13

                                NET INCOME WITH LAKESIDE CULLAGE                    57798.91
                     POTENTIAL NET INCOME WITHOUT LAKESIDE CULLAGE                  92656.75

                AVERAGE GROSS INCOME WITH LAKESIDE CULLAGE PER FISHERMAN      1506.21
      POTENTIAL AVERAGE GROSS INCOME ZERO  LAKESIDE CULLAGE PER FISHERMAN      2151.72
                AVERAGE NET   INCOME WITH LAKESIDE CULLAGE PER FISHERMAN      1070.35
      POTENTIAL AVERAGE NET   INCOME ZERO  LAKESIDE CULLAGE PER FISHERMAN      1715.87

                        NUMBER OF ENTERPRISES IN GROUP   27.
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                          TABLE 1 SOUTH INDIAN LAKE FISHERMEN
                         ASSUMPTION: 1972-73 DATA AS GIVEN

LENGTH OF WINTER SEASON 3.5 MONTHS
TOTAL CATCH    359954.  NO. OF FISHERMEN 36.                          GROSS REVENUE    GROSS COSTS    NET REVENUES
QUOTA SIZE  WHITEFISH   360000.  WALLEYE     40000.    PER FISHERMAN        1821.02        1139.96          681.05
                                                       PER POUND               0.18           0.11            0.07
FISHING METHOD                                         TOTAL               65556.63       41038.72        24517.92
LAKESIDE CULLAGE


LENGTH OF SUMMER SEASON 4.5 MONTHS
TOTAL CATCH    760258.  NO. OF FISHERMEN 78.                          GROSS REVENUE    GROSS COSTS    NET REVENUES
QUOTA SIZE  WHITEFISH   720000.  WALLEYE     80000.    PER FISHERMAN        1738.60         586.98         1151.62
                                                       PER POUND               0.18           0.06            0.12
FISHING METHOD                                         TOTAL              135611.03       45784.71        89826.31
LAKESIDE CULLAGE
```

TABLE 2 LEAF RAPIDS PLANT COSTS AND REVENUES
ASSUMPTION: 1972-73 DATA AS GIVEN

I. VARIABLE COSTS	(1) CO-OP PAYMENTS TO FISHERMEN	+	(2) VOLUME INCREMENT COSTS	+	(3) TRANSPORTATION TO LEAF RAPIDS	+	(4) TRANSPORTATION TO TRANSCONA	=	(5) TOTAL VARIABLE COSTS
WINTER SEASON									
TOTAL COSTS	65556.634		21581.109		7199.080		22461.131		116797.955
PER LB. THE PLANT SELLS*	0.192		0.063		0.021		0.066		0.341
PER LB. THE PLANT BUYS	0.182		0.060		0.015		0.065		0.324
SUMMER SEASON									
TOTAL COSTS	135611.027		42890.477		11403.869		42992.585		232897.957
PER LB. THE PLANT SELLS*	0.211		0.067		0.018		0.067		0.363
PER LB. THE PLANT BUYS	0.178		0.056		0.015		0.065		0.306
ANNUAL									
TOTAL COSTS	201167.661		64471.586		18602.949		65453.716		349695.912
PER LB. THE PLANT SELLS*	0.205		0.066		0.019		0.067		0.355
PER LB. THE PLANT BUYS	0.180		0.058		0.015		0.065		0.312

II. FIXED COSTS	(6) MINIMUM OPERATION COSTS	+	(7) CAPITAL COSTS	=	(8) TOTAL FIXED COSTS
WINTER SEASON					
TOTAL COSTS	39616.387		19306.671		58923.258
PER LB. THE PLANT SELLS	0.116		0.056		0.172
PER LB. THE PLANT BUYS	0.110		0.054		0.164
SUMMER SEASON					
TOTAL COSTS	51163.602		28899.949		80063.551
PER LB. THE PLANT SELLS	0.080		0.045		0.125
PER LB. THE PLANT BUYS	0.067		0.038		0.105
ANNUAL					
TOTAL COSTS	90779.988		48206.820		138986.809
PER LB. THE PLANT SELLS	0.092		0.049		0.141
PER LB. THE PLANT BUYS	0.081		0.043		0.124

III. NET PROFIT	(9) REVENUES PAID TO CO-OP	-	(10)=(5)+(8) TOTAL COSTS	=	(11)=(9)-(10) CO-OP PROFIT OR LOSS
WINTER SEASON					
TOTAL COSTS	132435.578		175721.212		-43285.634
PER LB. THE PLANT SELLS	0.387		0.514		-0.127
PER LB. THE PLANT BUYS	0.368		0.488		-0.120
SUMMER SEASON					
TOTAL COSTS	242758.460		312961.508		-70203.048
PER LB. THE PLANT SELLS	0.378		0.488		-0.109
PER LB. THE PLANT BUYS	0.319		0.412		-0.092
ANNUAL					
TOTAL COSTS	375194.039		488682.720		-113488.682
PER LB. THE PLANT SELLS	0.381		0.497		-0.115
PER LB. THE PLANT BUYS	0.335		0.436		-0.101

WINTER TRANSPORTATION METHOD: TO PLANT BOMBARDIER TO CORP. TRUCK RAIL
SUMMER TRANSPORTATION METHOD: TO PLANT FREIGHT BOAT TO CORP. TRUCK RAIL

OPERATIONS
VOLUME (LB.) 1120212. EMPLOYEES 18.0 EMPLOYEE INCOME 94000.
WINTER QUANTITY CULLED (LB.) LAKESIDE 154266. PLANT 14398. CORPORATION 3456.
SUMMER QUANTITY CULLED (LB.) LAKESIDE 325824. PLANT 98834. CORPORATION 19843.

* ACTUAL COST PER POUND SOLD PLUS COST OF CULLED FISH PER POUND SOLD

TABLE 5

SOUTH INDIAN LAKE CO-OP FISHERIES LTD. REVENUE AND COST STATEMENT

	PLANT		LAKE OPERATIONS		TOTALS
	DEBIT	CREDIT	DEBIT	CREDIT	
REVENUES					
AGENCY FEES		89616.88			89616.88
BOX ALLOWANCE		22404.23			22404.23
ICE DEDUCTION				11202.12	11202.12
CAMP DEDUCTION				11202.12	11202.12
TOTAL GROSS REVENUES		112021.00		22404.24	134425.10
OPERATING EXPENSES					
WAGES + SALARIES	64400.00		13600.00		78000.00
FRINGE BENEFITS	6440.00		1360.00		11960.00
BOXES	20631.59				20631.59
HYDRO COSTS	5000.00				5000.00
ICE EXPENSES			26400.00		26400.00
OFFICE OVERHEAD	45020.00				45020.00
CAPITAL ACCOUNT					
INTEREST	3017.35		553.52		3570.88
DEPRECIATION	37716.92		6919.03		44635.95
NET PROFIT OR LOSS	161594.00	112021.00	48832.55	22404.24	-76001.31**

** DIFFERENCE OF THIS PROFIT LOSS FIGURE AND PREVIOUS ONE DUE TO ROUNDING AND CULLAGE

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                                       TABLE 1 SOUTH INDIAN LAKE FISHERMEN
                                   ASSUMPTION:  25 PER CENT WRITE OFF OF PLANT

LENGTH OF WINTER SEASON 3.5 MONTHS                                      GROSS REVENUE    GROSS COSTS    NET REVENUES
TOTAL CATCH   359954.  NO. OF FISHERMEN 36.         PER FISHERMAN         1821.02        1139.96        681.05
QUOTA SIZE  WHITEFISH   360000.  WALLEYE     40000.  PER POUND               0.18           0.11          0.07
                                                    TOTAL                65556.63       41038.72      24517.92
FISHING METHOD
LAKESIDE CULLAGE


LENGTH OF SUMMER SEASON 4.5 MONTHS                                      GROSS REVENUE    GROSS COSTS    NET REVENUES
TOTAL CATCH   760258.  NO. OF FISHERMEN 78.         PER FISHERMAN         1738.60         586.98       1151.62
QUOTA SIZE  WHITEFISH   720000.  WALLEYE     80000.  PER POUND               0.18           0.06          0.12
                                                    TOTAL               135611.03       45784.71      89826.31
FISHING METHOD
LAKESIDE CULLAGE
```

TABLE 2 LEAF RAPIDS PLANT COSTS AND REVENUES
ASSUMPTION: 25 PER CENT WRITE OFF OF PLANT

I. VARIABLE COSTS	(1) CO-OP PAYMENTS TO FISHERMEN	+	(2) VOLUME INCREMENT COSTS	+	(3) TRANSPORTATION TO LEAF RAPIDS	+	(4) TRANSPORTATION TO TRANSCONA	=	(5) TOTAL VARIABLE COSTS
WINTER SEASON									
TOTAL COSTS	65556.634		21581.109		7199.080		22461.131		116797.955
PER LB. THE PLANT SELLS*	0.192		0.063		0.021		0.066		0.341
PER LB. THE PLANT BUYS	0.182		0.060		0.015		0.065		0.324
SUMMER SEASON									
TOTAL COSTS	135611.027		42890.477		11403.369		42992.585		232897.957
PER LB. THE PLANT SELLS*	0.211		0.067		0.018		0.067		0.363
PER LB. THE PLANT BUYS	0.178		0.056		0.015		0.065		0.306
ANNUAL									
TOTAL COSTS	201167.661		64471.586		18602.949		65453.716		349695.912
PER LB. THE PLANT SELLS*	0.205		0.066		0.019		0.067		0.355
PER LB. THE PLANT BUYS	0.180		0.058		0.015		0.065		0.312

II. FIXED COSTS	(6) MINIMUM OPERATION COSTS	+	(7) CAPITAL COSTS	=	(8) TOTAL FIXED COSTS
WINTER SEASON					
TOTAL COSTS	39616.387		14863.348		54479.734
PER LB. THE PLANT SELLS	0.116		0.043		0.159
PER LB. THE PLANT BUYS	0.110		0.041		0.151
SUMMER SEASON					
TOTAL COSTS	51163.602		23159.930		74323.531
PER LB. THE PLANT SELLS	0.080		0.036		0.116
PER LB. THE PLANT BUYS	0.067		0.030		0.098
ANNUAL					
TOTAL COSTS	90779.983		38023.277		128803.256
PER LB. THE PLANT SELLS	0.092		0.039		0.131
PER LB. THE PLANT BUYS	0.081		0.034		0.115

III. NET PROFIT	(9) REVENUES PAID TO CO-OP	-	(10)=(5)+(8) TOTAL COSTS	=	(11)=(9)-(10) CO-OP PROFIT OR LOSS
WINTER SEASON					
TOTAL COSTS	132435.578		171277.689		-38842.111
PER LB. THE PLANT SELLS	0.387		0.501		-0.114
PER LB. THE PLANT BUYS	0.368		0.476		-0.108
SUMMER SEASON					
TOTAL COSTS	242758.460		307221.488		-64463.028
PER LB. THE PLANT SELLS	0.378		0.479		-0.100
PER LB. THE PLANT BUYS	0.319		0.404		-0.085
ANNUAL					
TOTAL COSTS	375194.039		478499.178		-103305.139
PER LB. THE PLANT SELLS	0.381		0.486		-0.105
PER LB. THE PLANT BUYS	0.335		0.427		-0.092

WINTER TRANSPORTATION METHOD: TO PLANT BOMBARDIER TO CORP. TRUCK RAIL
SUMMER TRANSPORTATION METHOD: TO PLANT FREIGHT BOAT TO CORP. TRUCK RAIL

OPERATIONS
VOLUME (LB.) 1120212. EMPLOYEES 18.0 EMPLOYEE INCOME 94000.
WINTER QUANTITY CULLED (LB.) LAKESIDE 154266. PLANT 14398. CORPORATION 3456.
SUMMER QUANTITY CULLED (LB.) LAKESIDE 325824. PLANT 98834. CORPORATION 19843.

* ACTUAL COST PER POUND SOLD PLUS COST OF CULLED FISH PER POUND SOLD

TABLE 5

SOUTH INDIAN LAKE CO-OP FISHERIES LTD. REVENUE AND COST STATEMENT

	PLANT		LAKE OPERATIONS		TOTALS
	DEBIT	CREDIT	DEBIT	CREDIT	
REVENUES					
AGENCY FEES		89616.88			89616.88
BOX ALLOWANCE		22404.23			22404.23
ICE DEDUCTION				11202.12	11202.12
CAMP DEDUCTION				11202.12	11202.12
TOTAL GROSS REVENUES		112021.00		22404.24	134425.10
OPERATING EXPENSES					
WAGES + SALARIES	64400.00		13600.00		78000.00
FRINGE BENEFITS	6440.00		1360.00		11960.00
BOXES	20631.59				20631.59
HYDRO COSTS	5000.00				5000.00
ICE EXPENSES			26400.00		26400.00
OFFICE OVERHEAD	45020.00				45020.00
CAPITAL ACCOUNT					
INTEREST	2263.02		553.52		2816.54
DEPRECIATION	28287.71		6919.03		35206.74
NET PROFIT OR LOSS	151410.50	112021.00	48832.55	22404.24	-65817.81**

** DIFFERENCE OF THIS PROFIT LOSS FIGURE AND PREVIOUS ONE DUE TO ROUNDING AND CULLAGE

TABLE 1 SOUTH INDIAN LAKE FISHERMEN
ASSUMPTION: 50 PER CENT WRITE OFF OF PLANT

```
LENGTH OF WINTER SEASON 3.5 MONTHS
TOTAL CATCH    359954.  NO. OF FISHERMEN 36.                           GROSS REVENUE    GROSS COSTS    NET REVENUES
QUOTA SIZE  WHITEFISH   360000.  WALLEYE     40000.   PER FISHERMAN       1821.02          1139.96        681.05
                                                      PER POUND              0.18             0.11          0.07
FISHING METHOD                                        TOTAL               65556.63         41038.72      24517.92
LAKESIDE CULLAGE

LENGTH OF SUMMER SEASON 4.5 MONTHS
TOTAL CATCH    760258.  NO. OF FISHERMEN 78.                           GROSS REVENUE    GROSS COSTS    NET REVENUES
QUOTA SIZE  WHITEFISH   720000.  WALLEYE     80000.   PER FISHERMAN       1738.60           586.98       1151.62
                                                      PER POUND              0.18             0.06          0.12
FISHING METHOD                                        TOTAL              135611.03         45784.71      89826.31
LAKESIDE CULLAGE
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                              TABLE 2 LEAF RAPIDS PLANT COSTS AND REVENUES
                                ASSUMPTION:  50 PER CENT WRITE OFF OF PLANT

I. VARIABLE COSTS                  (1)                (2)                  (3)                     (4)                  (5)
                              CO-OP PAYMENTS  +  VOLUME INCREMENT  +  TRANSPORTATION TO  +  TRANSPORTATION TO  =  TOTAL VARIABLE
                              TO FISHERMEN           COSTS             LEAF RAPIDS            TRANSCONA               COSTS
WINTER SEASON
TOTAL COSTS                     65556.634         21581.109             7199.080               22461.131           116797.955
  PER LB. THE PLANT SELLS*          0.192             0.063                0.021                   0.066                0.341
  PER LB. THE PLANT BUYS            0.182             0.060                0.015                   0.065                0.324
SUMMER SEASON
TOTAL COSTS                    135611.027         42890.477            11403.869               42992.585           232897.957
  PER LB. THE PLANT SELLS*          0.211             0.067                0.018                   0.067                0.363
  PER LB. THE PLANT BUYS            0.178             0.056                0.015                   0.065                0.306
ANNUAL
TOTAL COSTS                    201167.661         64471.586            18602.949               65453.716           349695.912
  PER LB. THE PLANT SELLS*          0.205             0.066                0.019                   0.067                0.355
  PER LB. THE PLANT BUYS            0.180             0.058                0.015                   0.065                0.312
-------------------------------------------------------------------------------------------------------------------------------

II. FIXED COSTS                               (6)                     (7)                 (8)
                                  MINIMUM OPERATION COSTS  +  CAPITAL COSTS  =  TOTAL FIXED COSTS
WINTER SEASON
  TOTAL COSTS                              39616.387             10419.801           50036.188
  PER LB. THE PLANT SELLS                      0.116                 0.030               0.146
  PER LB. THE PLANT BUYS                       0.110                 0.029               0.139
SUMMER SEASON
  TOTAL COSTS                              51163.602             17419.883           68583.494
  PER LB. THE PLANT SELLS                      0.080                 0.027               0.107
  PER LB. THE PLANT BUYS                       0.067                 0.023               0.090
ANNUAL
  TOTAL COSTS                              90779.988             27839.684          118619.672
  PER LB. THE PLANT SELLS                      0.092                 0.028               0.121
  PER LB. THE PLANT BUYS                       0.081                 0.025               0.106
-------------------------------------------------------------------------------------------------------------------------------

III. NET PROFIT                               (9)                 (10)=(5)+(8)       (11)=(9)-(10)
                                  REVENUES PAID TO CO-OP   -   TOTAL COSTS   =   CO-OP PROFIT OR LOSS
WINTER SEASON
  TOTAL COSTS                             132435.578            166834.142          -34398.564
  PER LB. THE PLANT SELLS                      0.387                 0.468              -0.101
  PER LB. THE PLANT BUYS                       0.368                 0.463              -0.096
SUMMER SEASON
  TOTAL COSTS                             242758.460            301481.442          -58722.981
  PER LB. THE PLANT SELLS                      0.378                 0.470              -0.092
  PER LB. THE PLANT BUYS                       0.319                 0.397              -0.077
ANNUAL
  TOTAL COSTS                             375194.039            468315.584          -93121.545
  PER LB. THE PLANT SELLS                      0.381                 0.476              -0.095
  PER LB. THE PLANT BUYS                       0.335                 0.418              -0.083

WINTER     TRANSPORTATION METHOD: TO PLANT  BOMBARDIER        TO CORP.  TRUCK RAIL
SUMMER     TRANSPORTATION METHOD: TO PLANT  FREIGHT BOAT      TO CORP.  TRUCK RAIL
OPERATIONS
VOLUME (LB.)        1120212.     EMPLOYEES        18.0                EMPLOYEE INCOME    94000.
WINTER     QUANTITY CULLED (LB.)      LAKESIDE 154266.   PLANT       14398.            CORPORATION       3456.
SUMMER     QUANTITY CULLED (LB.)      LAKESIDE 325824.   PLANT       98634.            CORPORATION      15843.
* ACTUAL COST PER POUND SOLD PLUS COST OF CULLED FISH PER POUND SOLD
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TABLE 5

SOUTH INDIAN LAKE CO-OP FISHERIES LTD. REVENUE AND COST STATEMENT

	PLANT		LAKE OPERATIONS		TOTALS
	DEBIT	CREDIT	DEBIT	CREDIT	
REVENUES					
AGENCY FEES		89616.88			89616.88
BOX ALLOWANCE		22404.23			22404.23
ICE DEDUCTION				11202.12	11202.12
CAMP DEDUCTION				11202.12	11202.12
TOTAL GROSS REVENUES		112021.00		22404.24	134425.10
OPERATING EXPENSES					
WAGES + SALARIES	64400.00		13600.00		78000.00
FRINGE BENEFITS	6440.00		1360.00		11960.00
BOXES	20631.59				20631.59
HYDRO COSTS	5000.00				5000.00
ICE EXPENSES			26400.00		26400.00
OFFICE OVERHEAD	45020.00				45020.00
CAPITAL ACCOUNT					
INTEREST	1508.68		553.52		2062.20
DEPRECIATION	18858.46		6919.03		25777.49
NET PROFIT OR LOSS	141226.90	112021.00	48832.55	22404.24	-55634.23**

** DIFFERENCE OF THIS PROFIT LOSS FIGURE AND PREVIOUS ONE DUE TO ROUNDING AND CULLAGE

```
                              TABLE 1 SOUTH INDIAN LAKE FISHERMEN
                            ASSUMPTION:  75 PER CENT WRITE OFF OF PLANT

LENGTH OF WINTER SEASON 3.5 MONTHS
TOTAL CATCH    359954.  NO. OF FISHERMEN 36.                        GROSS REVENUE    GROSS COSTS    NET REVENUES
QUOTA SIZE  WHITEFISH   360000.  WALLEYE     40000.   PER FISHERMAN      1821.02        1139.96         681.05
                                                      PER POUND             0.18           0.11           0.07
                                                      TOTAL             65556.63       41038.72       24517.92
FISHING METHOD
LAKESIDE CULLAGE


LENGTH OF SUMMER SEASON 4.5 MONTHS
TOTAL CATCH    760258.  NO. OF FISHERMEN 78.                        GROSS REVENUE    GROSS COSTS    NET REVENUES
QUOTA SIZE  WHITEFISH   720000.  WALLEYE     80000.   PER FISHERMAN      1738.60         586.98        1151.62
                                                      PER POUND             0.18           0.06           0.12
                                                      TOTAL            135611.03       45784.71       89826.31
FISHING METHOD
LAKESIDE CULLAGE
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                         TABLE 2 LEAF RAPIDS PLANT COSTS AND REVENUES
                         ASSUMPTION:  75 PER CENT WRITE OFF OF PLANT

I. VARIABLE COSTS     (1)                  (2)                   (3)                      (4)                    (5)
               CO-OP PAYMENTS   +   VOLUME INCREMENT   +   TRANSPORTATION TO   +   TRANSPORTATION TO   =   TOTAL VARIABLE
               TO FISHERMEN              COSTS                LEAF RAPIDS              TRANSCONA                COSTS
WINTER SEASON
TOTAL COSTS             65556.634         21581.109            7199.080                22461.131              116797.955
  PER LB. THE PLANT SELLS*  0.192             0.063               0.021                    0.066                   0.341
  PER LB. THE PLANT BUYS    0.182             0.060               0.015                    0.065                   0.324
SUMMER SEASON
TOTAL COSTS            135611.027         42890.477           11403.869                42992.585              232897.957
  PER LB. THE PLANT SELLS*  0.211             0.067               0.018                    0.067                   0.363
  PER LB. THE PLANT BUYS    0.178             0.056               0.015                    0.065                   0.306
ANNUAL
TOTAL COSTS            201167.661         64471.586           18602.949                65453.716              349695.912
  PER LB. THE PLANT SELLS*  0.205             0.066               0.019                    0.067                   0.355
  PER LB. THE PLANT BUYS    0.180             0.058               0.015                    0.065                   0.312
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II. FIXED COSTS                       (6)                      (7)                  (8)
                          MINIMUM OPERATION COSTS   +   CAPITAL COSTS   =   TOTAL FIXED COSTS
WINTER SEASON
  TOTAL COSTS                         39616.387                5976.273             45592.660
  PER LB. THE PLANT SELLS                 0.116                   0.017                 0.133
  PER LB. THE PLANT BUYS                  0.110                   0.017                 0.127
SUMMER SEASON
  TOTAL COSTS                         51163.602               11679.863             62843.465
  PER LB. THE PLANT SELLS                 0.080                   0.018                 0.098
  PER LB. THE PLANT BUYS                  0.067                   0.015                 0.083
ANNUAL
  TOTAL COSTS                         90779.988               17656.137            108436.125
  PER LB. THE PLANT SELLS                 0.092                   0.018                 0.110
  PER LB. THE PLANT BUYS                  0.081                   0.016                 0.097
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III. NET PROFIT                       (9)                  (10)=(5)+(8)         (11)=(9)-(10)
                          REVENUES PAID TO CO-OP   -   TOTAL COSTS   =   CO-OP PROFIT OR LOSS
WINTER SEASON
  TOTAL COSTS                        132435.578               162390.615           -29955.036
  PER LB. THE PLANT SELLS                 0.387                   0.475                -0.098
  PER LB. THE PLANT BUYS                  0.368                   0.451                -0.083
SUMMER SEASON
  TOTAL COSTS                        242758.460               295741.422           -52982.962
  PER LB. THE PLANT SELLS                 0.378                   0.461                -0.083
  PER LB. THE PLANT BUYS                  0.319                   0.389                -0.070
ANNUAL
  TOTAL COSTS                        375194.039               458132.037           -82937.998
  PER LB. THE PLANT SELLS                 0.381                   0.466                -0.084
  PER LB. THE PLANT BUYS                  0.335                   0.409                -0.074

WINTER     TRANSPORTATION METHOD: TO PLANT  BOMBARDIER      TO CORP.  TRUCK RAIL
SUMMER     TRANSPORTATION METHOD: TO PLANT  FREIGHT BOAT    TO CORP.  TRUCK RAIL
OPERATIONS
VOLUME (LB.)        1120212.     EMPLOYEES       18.0            EMPLOYEE INCOME   94000.
WINTER     QUANTITY CULLED (LB.)       LAKESIDE 154266.   PLANT      14398.            CORPORATION      3456.
SUMMER     QUANTITY CULLED (LB.)       LAKESIDE 325824.   PLANT      98834.            CORPORATION     19843.
* ACTUAL COST PER POUND SOLD PLUS COST OF CULLED FISH PER POUND SOLD
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TABLE 5

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                       SOUTH INDIAN LAKE CO-OP FISHERIES LTD. REVENUE AND COST STATEMENT
                               PLANT                          LAKE OPERATIONS
                     DEBIT              CREDIT              DEBIT          CREDIT          TOTALS
REVENUES
   AGENCY FEES                         89616.88
   BOX ALLOWANCE                       22404.23                                             89616.88
   ICE DEDUCTION                                                                            22404.23
   CAMP DEDUCTION                                                         11202.12          11202.12
   TOTAL GROSS REVENUES                                                   11202.12          11202.12
OPERATING EXPENSES                    112021.00                           22404.24         134425.10
   WAGES + SALARIES      64400.00
   FRINGE BENEFITS        6440.00                          13600.00                         78000.00
   BOXES                 20631.59                           1360.00                         11060.00
   HYDRO COSTS            5000.00                                                           20631.59
   ICE EXPENSES                                                                              5000.00
   OFFICE OVERHEAD       45020.00                          26400.00                         26400.00
CAPITAL ACCOUNT                                                                             45020.00
   INTEREST                754.34                            553.52
   DEPRECIATION           9429.25                           6919.03                          1307.86
NET PROFIT OR LOSS      131043.40     112021.00            48832.55       22404.24          16348.28
                                                                                           -45450.73**

** DIFFERENCE OF THIS PROFIT LOSS FIGURE AND PREVIOUS ONE DUE TO ROUNDING AND CULLAGE
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                                    TABLE 1 SOUTH INDIAN LAKE FISHERMEN
                                 ASSUMPTION: 100 PER CENT WRITE OFF OF PLANT

LENGTH OF WINTER SEASON 3.5 MONTHS
TOTAL CATCH   359954.  NO. OF FISHERMEN 36.                         GROSS REVENUE   GROSS COSTS   NET REVENUES
QUOTA SIZE  WHITEFISH   360000.  WALLEYE    40000.     PER FISHERMAN      1821.02       1139.96        681.05
                                                       PER POUND             0.18          0.11          0.07
                                                       TOTAL             65556.63      41038.72      24517.92
FISHING METHOD
LAKESIDE CULLAGE

LENGTH OF SUMMER SEASON 4.5 MONTHS
TOTAL CATCH   760258.  NO. OF FISHERMEN 78.                         GROSS REVENUE   GROSS COSTS   NET REVENUES
QUOTA SIZE  WHITEFISH   720000.  WALLEYE    80000.     PER FISHERMAN      1738.60        586.98       1151.62
                                                       PER POUND             0.18          0.06          0.12
                                                       TOTAL            135611.03      45784.71      89826.31
FISHING METHOD
LAKESIDE CULLAGE
```

TABLE 2 LEAF RAPIDS PLANT COSTS AND REVENUES
ASSUMPTION: 100 PER CENT WRITE OFF OF PLANT

I. VARIABLE COSTS	(1) CO-OP PAYMENTS TO FISHERMEN +	(2) VOLUME INCREMENT COSTS +	(3) TRANSPORTATION TO LEAF RAPIDS +	(4) TRANSPORTATION TO TRANSCONA =	(5) TOTAL VARIABLE COSTS
WINTER SEASON					
TOTAL COSTS	65556.634	21581.100	7199.090	22461.131	116797.955
PER LB. THE PLANT SELLS*	0.192	0.063	0.021	0.066	0.341
PER LB. THE PLANT BUYS	0.182	0.060	0.015	0.065	0.324
SUMMER SEASON					
TOTAL COSTS	135611.027	42890.477	11403.869	42992.595	232897.957
PER LB. THE PLANT SELLS*	0.211	0.067	0.018	0.067	0.363
PER LB. THE PLANT BUYS	0.178	0.056	0.015	0.065	0.306
ANNUAL					
TOTAL COSTS	201167.661	64471.536	18602.949	65453.716	349695.912
PER LB. THE PLANT SELLS*	0.205	0.066	0.019	0.067	0.355
PER LB. THE PLANT BUYS	0.180	0.058	0.015	0.065	0.312

II. FIXED COSTS	(6) MINIMUM OPERATION COSTS +	(7) CAPITAL COSTS =	(8) TOTAL FIXED COSTS
WINTER SEASON			
TOTAL COSTS	39616.387	1532.732	41149.119
PER LB. THE PLANT SELLS	0.116	0.004	0.120
PER LB. THE PLANT BUYS	0.110	0.004	0.114
SUMMER SEASON			
TOTAL COSTS	51163.602	5939.816	57103.418
PER LB. THE PLANT SELLS	0.080	0.009	0.089
PER LB. THE PLANT BUYS	0.067	0.008	0.075
ANNUAL			
TOTAL COSTS	90779.989	7472.549	98252.537
PER LB. THE PLANT SELLS	0.092	0.008	0.100
PER LB. THE PLANT BUYS	0.081	0.007	0.088

III. NET PROFIT	(9) REVENUES PAID TO CO-OP -	(10)=(5)+(8) TOTAL COSTS =	(11)=(9)-(10) CO-OP PROFIT OR LOSS
WINTER SEASON			
TOTAL COSTS	132435.578	157947.074	-25511.495
PER LB. THE PLANT SELLS	0.387	0.462	-0.075
PER LB. THE PLANT BUYS	0.368	0.439	-0.071
SUMMER SEASON			
TOTAL COSTS	242758.460	290001.375	-47242.915
PER LB. THE PLANT SELLS	0.378	0.452	-0.074
PER LB. THE PLANT BUYS	0.319	0.381	-0.062
ANNUAL			
TOTAL COSTS	375194.039	447948.449	-72754.410
PER LB. THE PLANT SELLS	0.381	0.455	-0.074
PER LB. THE PLANT BUYS	0.335	0.400	-0.065

WINTER TRANSPORTATION METHOD: TO PLANT BOMBARDIER TO CORP. TRUCK RAIL
SUMMER TRANSPORTATION METHOD: TO PLANT FREIGHT BOAT TO CORP. TRUCK RAIL

OPERATIONS
VOLUME (LB.) 1120212. EMPLOYEES 18.0 EMPLOYEE INCOME 94000.
WINTER QUANTITY CULLED (LB.) LAKESIDE 154266. PLANT 14398. CORPORATION 3456.
SUMMER QUANTITY CULLED (LB.) LAKESIDE 325824. PLANT 98934. CORPORATION 19843.
* ACTUAL COST PER POUND SOLD PLUS COST OF CULLED FISH PER POUND SOLD

TABLE 5

SOUTH INDIAN LAKE CO-OP FISHERIES LTD. REVENUE AND COST STATEMENT	PLANT		LAKE OPERATIONS		TOTALS
	DEBIT	CREDIT	DEBIT	CREDIT	
REVENUES					
AGENCY FEES		89616.88			89616.98
BOX ALLOWANCE		22404.23			22404.23
ICE DEDUCTION				11202.12	11202.12
CAMP DEDUCTION				11202.12	11202.12
TOTAL GROSS REVENUES		112021.00		22404.24	134425.10
OPERATING EXPENSES					
WAGES + SALARIES	64400.00		13600.00		78000.00
FRINGE BENEFITS	6440.00		1360.00		11960.00
BOXES	20631.59				20631.59
HYDRO COSTS	5000.00				5000.00
ICE EXPENSES			26400.00		26400.00
OFFICE OVERHEAD	45020.00				45020.00
CAPITAL ACCOUNT					
INTEREST	0.00		553.52		553.52
DEPRECIATION	0.00		6919.03		6919.03
NET PROFIT OR LOSS	120859.80	112021.00	48832.55	22404.24	-35267.17**

** DIFFERENCE OF THIS PROFIT LOSS FIGURE AND PREVIOUS ONE DUE TO ROUNDING AND CULLAGE

```
                                  TABLE 1 SOUTH INDIAN LAKE FISHERMEN
                                  ASSUMPTION: NO PLANT OPERATION

LENGTH OF WINTER SEASON 3.5 MONTHS
TOTAL CATCH   359954.  NO. OF FISHERMEN 36.                          GROSS REVENUE   GROSS COSTS   NET REVENUES
QUOTA SIZE  WHITEFISH   360000.  WALLEYE    40000.     PER FISHERMAN      1821.02        1139.95        681.05
                                                       PER POUND             0.18           0.11           0.07
FISHING METHOD                                         TOTAL             65556.63       41038.72       24517.92
LAKESIDE CULLAGE


LENGTH OF SUMMER SEASON 4.5 MONTHS
TOTAL CATCH   760258.  NO. OF FISHERMEN 78.                          GROSS REVENUE   GROSS COSTS   NET REVENUES
QUOTA SIZE  WHITEFISH   720000.  WALLEYE    80000.     PER FISHERMAN      1738.60         586.98       1151.62
                                                       PER POUND             0.18           0.06           0.12
FISHING METHOD                                         TOTAL            135611.03       45784.71       89826.31
LAKESIDE CULLAGE
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                            TABLE 2 LEAF RAPIDS PLANT COSTS AND REVENUES
                               ASSUMPTION: NO PLANT OPERATION

I. VARIABLE COSTS              (1)                 (2)                   (3)                    (4)                   (5)
                         CO-OP PAYMENTS  +  VOLUME INCREMENT  +  TRANSPORTATION TO  +  TRANSPORTATION TO  =  TOTAL VARIABLE
                         TO FISHERMEN            COSTS             LEAF RAPIDS            TRANSCONA              COSTS
WINTER SEASON
TOTAL COSTS                 65556.634           12518.820            7199.080             22461.131           107735.666
  PER LB. THE PLANT SELLS*      0.192               0.037               0.021                 0.066                0.315
  PER LB. THE PLANT BUYS        0.182               0.035               0.015                 0.055                0.299
SUMMER SEASON
TOTAL COSTS                135611.027           28749.977           11403.869             42992.585           218757.457
  PER LB. THE PLANT SELLS*      0.211               0.045               0.018                 0.067                0.341
  PER LB. THE PLANT BUYS        0.178               0.038               0.015                 0.065                0.288
ANNUAL
TOTAL COSTS                201167.661           41268.797           18602.949             65453.716           326493.123
  PER LB. THE PLANT SELLS*      0.205               0.042               0.019                 0.067                0.332
  PER LB. THE PLANT BUYS        0.180               0.037               0.015                 0.065                0.291
--------------------------------------------------------------------------------------------------------------------------

II. FIXED COSTS                              (6)                      (7)               (8)
                                  MINIMUM OPERATION COSTS  +  CAPITAL COSTS  =  TOTAL FIXED COSTS
WINTER SEASON
  TOTAL COSTS                                0.000                1532.732          1532.732
  PER LB. THE PLANT SELLS                    0.000                   0.004             0.004
  PER LB. THE PLANT BUYS                     0.000                   0.004             0.004
SUMMER SEASON
  TOTAL COSTS                                0.000                5939.816          5939.816
  PER LB. THE PLANT SELLS                    0.000                   0.009             0.009
  PER LB. THE PLANT BUYS                     0.000                   0.008             0.008
ANNUAL
  TOTAL COSTS                                0.000                7472.549          7472.549
  PER LB. THE PLANT SELLS                    0.000                   0.008             0.008
  PER LB. THE PLANT BUYS                     0.000                   0.007             0.007
--------------------------------------------------------------------------------------------------------------------------

III. NET PROFIT                              (9)                  (10)=(5)+(8)       (11)=(9)-(10)
                                  REVENUES PAID TO CO-OP   -   TOTAL COSTS   =   CO-OP PROFIT OR LOSS
WINTER SEASON
  TOTAL COSTS                           132435.578             109268.398          23167.181
  PER LB. THE PLANT SELLS                    0.387                  0.319              0.068
  PER LB. THE PLANT BUYS                     0.368                  0.304              0.064
SUMMER SEASON
  TOTAL COSTS                           242758.460             224697.274          18061.187
  PER LB. THE PLANT SELLS                    0.378                  0.350              0.028
  PER LB. THE PLANT BUYS                     0.319                  0.296              0.024
ANNUAL
  TOTAL COSTS                           375194.039             333965.671          41228.367
  PER LB. THE PLANT SELLS                    0.381                  0.340              0.042
  PER LB. THE PLANT BUYS                     0.335                  0.298              0.037

WINTER    TRANSPORTATION METHOD: TO PLANT  BOMBARDIER      TO CORP.  TRUCK RAIL
SUMMER    TRANSPORTATION METHOD: TO PLANT  FREIGHT BOAT    TO CORP.  TRUCK RAIL
OPERATIONS
VOLUME (LB.)       1120212.    EMPLOYEES        11.0             EMPLOYEE INCOME   29600.
WINTER    QUANTITY CULLED (LB.)     LAKESIDE 154265.  PLANT      14398.            CORPORATION        3456.
SUMMER    QUANTITY CULLED (LB.)     LAKESIDE 325624.  PLANT      98834.            CORPORATION       19843.
* ACTUAL COST PER POUND SOLD PLUS COST OF CULLED FISH PER POUND SOLD
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TABLE 5

SOUTH INDIAN LAKE CO-OP FISHERIES LTD. REVENUE AND COST STATEMENT

	PLANT DEBIT	PLANT CREDIT	LAKE OPERATIONS DEBIT	LAKE OPERATIONS CREDIT	TOTALS
REVENUES					
AGENCY FEES		89616.88			89616.88
BOX ALLOWANCE		22404.23			22404.23
ICE DEDUCTION				11202.12	11202.12
CAMP DEDUCTION				11202.12	11202.12
TOTAL GROSS REVENUES		112021.00		22404.24	134425.10
OPERATING EXPENSES					
WAGES + SALARIES	0.00		13600.00		13600.00
FRINGE BENEFITS	0.00		1360.00		1360.00
BOXES	27508.30				27508.30
HYDRO COSTS	0.00				0.00
ICE EXPENSES			26400.00		26400.00
OFFICE OVERHEAD	0.00				0.00
CAPITAL ACCOUNT					
INTEREST	0.00		553.52		553.52
DEPRECIATION	0.00		6919.03		6919.03
NET PROFIT OR LOSS	0.00	112021.00	48832.55	22404.24	85592.69**

** DIFFERENCE OF THIS PROFIT LOSS FIGURE AND PREVIOUS ONE DUE TO ROUNDING AND CULLAGE

```
                                  TABLE 1 SOUTH INDIAN LAKE FISHERMEN
                                ASSUMPTION: QUOTA LOWERED TO  510000(S)  90000(W)

LENGTH OF WINTER SEASON 3.5 MONTHS
TOTAL CATCH     99989.  NO. OF FISHERMEN  9.                              GROSS REVENUE    GROSS COSTS    NET REVENUES
QUOTA SIZE  WHITEFISH    81000.  WALLEYE      9000.     PER FISHERMAN        1821.02         1139.96        681.05
                                                        PER POUND               0.18            0.11          0.07
FISHING METHOD                                          TOTAL               16389.16        10259.68       6129.48
LAKESIDE CULLAGE


LENGTH OF SUMMER SEASON 4.5 MONTHS
TOTAL CATCH    506839.  NO. OF FISHERMEN 52.                              GROSS REVENUE    GROSS COSTS    NET REVENUES
QUOTA SIZE  WHITEFISH   459000.  WALLEYE     51000.     PER FISHERMAN        1738.60          586.98       1151.62
                                                        PER POUND               0.18            0.06          0.12
FISHING METHOD                                          TOTAL               90407.36        30523.15      59884.21
LAKESIDE CULLAGE
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TABLE 2 LEAF RAPIDS PLANT COSTS AND REVENUES
ASSUMPTION: QUOTA LOWERED TO 510000(S) 90000(W)

I. VARIABLE COSTS	(1) CO-OP PAYMENTS TO FISHERMEN	+	(2) VOLUME INCREMENT COSTS	+	(3) TRANSPORTATION TO LEAF RAPIDS	+	(4) TRANSPORTATION TO TRANSCONA	=	(5) TOTAL VARIABLE COSTS
WINTER SEASON									
TOTAL COSTS	16389.160		10237.773		1799.770		5615.283		34041.987
PER LB. THE PLANT SELLS*	0.192		0.120		0.021		0.066		0.398
PER LB. THE PLANT BUYS	0.182		0.114		0.015		0.065		0.378
SUMMER SEASON									
TOTAL COSTS	90407.359		34520.988		7602.579		28661.725		161192.651
PER LB. THE PLANT SELLS*	0.211		0.081		0.018		0.067		0.377
PER LB. THE PLANT BUYS	0.176		0.068		0.015		0.065		0.318
ANNUAL									
TOTAL COSTS	106796.519		44758.762		9402.350		34277.008		195234.639
PER LB. THE PLANT SELLS*	0.208		0.087		0.018		0.067		0.380
PER LB. THE PLANT BUYS	0.179		0.075		0.015		0.065		0.327

II. FIXED COSTS	(6) MINIMUM OPERATION COSTS	+	(7) CAPITAL COSTS	=	(8) TOTAL FIXED COSTS
WINTER SEASON					
TOTAL COSTS	39616.387		19306.871		58923.258
PER LB. THE PLANT SELLS	0.463		0.226		0.689
PER LB. THE PLANT BUYS	0.440		0.215		0.655
SUMMER SEASON					
TOTAL COSTS	51163.602		28899.949		80063.551
PER LB. THE PLANT SELLS	0.120		0.068		0.187
PER LB. THE PLANT BUYS	0.101		0.057		0.158
ANNUAL					
TOTAL COSTS	90779.989		48206.820		138986.809
PER LB. THE PLANT SELLS	0.177		0.094		0.271
PER LB. THE PLANT BUYS	0.152		0.081		0.233

III. NET PROFIT	(9) REVENUES PAID TO CO-OP	-	(10)=(5)+(8) TOTAL COSTS	=	(11)=(9)-(10) CO-OP PROFIT OR LOSS
WINTER SEASON					
TOTAL COSTS	33108.898		92965.245		-59856.348
PER LB. THE PLANT SELLS	0.387		1.087		-0.700
PER LB. THE PLANT BUYS	0.368		1.033		-0.665
SUMMER SEASON					
TOTAL COSTS	161838.981		241256.202		-79417.221
PER LB. THE PLANT SELLS	0.378		0.564		-0.186
PER LB. THE PLANT BUYS	0.319		0.476		-0.157
ANNUAL					
TOTAL COSTS	194947.878		334221.447		-139273.569
PER LB. THE PLANT SELLS	0.380		0.651		-0.271
PER LB. THE PLANT BUYS	0.327		0.560		-0.233

WINTER TRANSPORTATION METHOD: TO PLANT BOMBARDIER TO CORP. TRUCK RAIL
SUMMER TRANSPORTATION METHOD: TO PLANT FREIGHT BOAT TO CORP. TRUCK RAIL

OPERATIONS
VOLUME (LB.) 596827. EMPLOYEES 15.0 EMPLOYEE INCOME 84800.

WINTER	QUANTITY CULLED (LB.)	LAKESIDE	38567.	PLANT	3600.	CORPORATION	864.
SUMMER	QUANTITY CULLED (LB.)	LAKESIDE	217216.	PLANT	65089.	CORPORATION	13228.

* ACTUAL COST PER POUND SOLD PLUS COST OF CULLED FISH PER POUND SOLD

TABLE 5

SOUTH INDIAN LAKE CO-OP FISHERIES LTD. REVENUE AND COST STATEMENT

	PLANT		LAKE OPERATIONS		TOTALS
	DEBIT	CREDIT	DEBIT	CREDIT	
REVENUES					
AGENCY FEES		47746.16			47746.16
BOX ALLOWANCE		11936.54			11936.54
ICE DEDUCTION				5968.27	5968.27
CAMP DEDUCTION				5968.27	5968.27
TOTAL GROSS REVENUES		59682.70		11936.54	71619.19
OPERATING EXPENSES					
WAGES + SALARIES	55200.00		13600.00		68800.00
FRINGE BENEFITS	5520.00		1360.00		11040.00
BOXES	11038.77				11038.77
HYDRO COSTS	5000.00				5000.00
ICE EXPENSES			26400.00		26400.00
OFFICE OVERHEAD	45020.00				45020.00
CAPITAL ACCOUNT					
INTEREST	3017.35		553.52		3570.88
DEPRECIATION	37716.92		6919.03		44635.95
NET PROFIT OR LOSS	151474.00	59682.70	48832.55	11936.54	-128687.30**

** DIFFERENCE OF THIS PROFIT LOSS FIGURE AND PREVIOUS ONE DUE TO ROUNDING AND CULLAGE

```
                                        TABLE 1 SOUTH INDIAN LAKE FISHERMEN
                                  ASSUMPTION: QUOTA LOWERED TO  510000(S)  270000(W)

LENGTH OF WINTER SEASON 3.5 MONTHS                                          GROSS REVENUE    GROSS COSTS    NET REVENUES
TOTAL CATCH    273166.  NO. OF FISHERMEN 27.                 PER FISHERMAN       1821.02        1139.96         681.05
QUOTA SIZE  WHITEFISH   243000.  WALLEYE    27000.           PER POUND              0.18           0.11           0.07
                                                             TOTAL              49167.47       30779.03       18388.43
FISHING METHOD
LAKESIDE CULLAGE


LENGTH OF SUMMER SEASON 4.5 MONTHS                                          GROSS REVENUE    GROSS COSTS    NET REVENUES
TOTAL CATCH    506839.  NO. OF FISHERMEN 52.                 PER FISHERMAN       1738.60         586.98        1151.62
QUOTA SIZE  WHITEFISH   459000.  WALLEYE    51000.           PER POUND              0.18           0.06           0.12
                                                             TOTAL              90407.36       30523.15       59884.21
FISHING METHOD
LAKESIDE CULLAGE
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                              TABLE 2 LEAF RAPIDS PLANT COSTS AND REVENUES
                               ASSUMPTION: QUOTA LOWERED TO  510000(S)  270000(W)

I. VARIABLE COSTS                 (1)                 (2)                  (3)                    (4)                  (5)
                           CO-OP PAYMENTS  +  VOLUME INCREMENT  +  TRANSPORTATION TO  +  TRANSPORTATION TO  =  TOTAL VARIABLE
                            TO FISHERMEN           COSTS              LEAF RAPIDS            TRANSCONA              COSTS
WINTER SEASON
TOTAL COSTS                  49167.467          16773.328             5399.310             16845.849            88185.954
  PER LB. THE PLANT SELLS*      0.192              0.065                0.021                 0.066                0.344
  PER LB. THE PLANT BUYS        0.182              0.062                0.015                 0.065                0.327
SUMMER SEASON
TOTAL COSTS                  90407.359          34520.988             7602.579             28661.725           161192.651
  PER LB. THE PLANT SELLS*      0.211              0.081                0.018                 0.067                0.377
  PER LB. THE PLANT BUYS        0.174              0.063                0.015                 0.065                0.318
ANNUAL
TOTAL COSTS                 139574.826          51294.316            13001.890             45507.573           249378.605
  PER LB. THE PLANT SELLS*      0.204              0.075                0.019                 0.067                0.364
  PER LB. THE PLANT BUYS        0.180              0.066                0.015                 0.065                0.321
-------------------------------------------------------------------------------------------------------------------------

II. FIXED COSTS                              (6)                  (7)                 (8)
                                   MINIMUM OPERATION COSTS  +  CAPITAL COSTS  =  TOTAL FIXED COSTS
WINTER SEASON
  TOTAL COSTS                              39616.387            19306.871           58923.258
  PER LB. THE PLANT SELLS                      0.154                0.075               0.230
  PER LB. THE PLANT BUYS                       0.147                0.072               0.218
SUMMER SEASON
  TOTAL COSTS                              51163.602            28899.949           80063.551
  PER LB. THE PLANT SELLS                      0.120                0.068               0.187
  PER LB. THE PLANT BUYS                       0.101                0.057               0.158
ANNUAL
  TOTAL COSTS                              90779.989            48206.820          138986.809
  PER LB. THE PLANT SELLS                      0.133                0.070               0.203
  PER LB. THE PLANT BUYS                       0.117                0.062               0.179
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III. NET PROFIT                              (9)              (10)=(5)+(8)      (11)=(9)-(10)
                                   REVENUES PAID TO CO-OP  -  TOTAL COSTS  =  CO-OP PROFIT OR LOSS
WINTER SEASON
  TOTAL COSTS                              99326.686           147109.212          -47782.526
  PER LB. THE PLANT SELLS                      0.387                0.573              -0.186
  PER LB. THE PLANT BUYS                       0.368                0.545              -0.177
SUMMER SEASON
  TOTAL COSTS                             161838.981           241256.202          -79417.221
  PER LB. THE PLANT SELLS                      0.378                0.564              -0.186
  PER LB. THE PLANT BUYS                       0.319                0.476              -0.157
ANNUAL
  TOTAL COSTS                             261165.667           388365.414         -127199.747
  PER LB. THE PLANT SELLS                      0.382                0.568              -0.186
  PER LB. THE PLANT BUYS                       0.336                0.500              -0.164

WINTER     TRANSPORTATION METHOD: TO PLANT  BOMBARDIER       TO CORP.  TRUCK RAIL
SUMMER     TRANSPORTATION METHOD: TO PLANT  FREIGHT BOAT     TO CORP.  TRUCK RAIL
OPERATIONS
VOLUME (LB.)          776804.     EMPLOYEES        16.0              EMPLOYEE INCOME   87600.
WINTER     QUANTITY CULLED (LB.)      LAKESIDE 115599.  PLANT       10799.              CORPORATION        2592.
SUMMER     QUANTITY CULLED (LB.)      LAKESIDE 217216.  PLANT       65889.              CORPORATION       13228.
* ACTUAL COST PER POUND SOLD PLUS COST OF CULLED FISH PER POUND SOLD
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TABLE 5

SOUTH INDIAN LAKE CO-OP FISHERIES LTD. REVENUE AND COST STATEMENT

	PLANT		LAKE OPERATIONS		TOTALS
	DEBIT	CREDIT	DEBIT	CREDIT	
REVENUES					
AGENCY FEES		62144.32			62144.32
BOX ALLOWANCE		15536.08			15536.08
ICE DEDUCTION				7768.04	7768.04
CAMP DEDUCTION				7768.04	7768.04
TOTAL GROSS REVENUES		77680.38		15536.08	93216.38
OPERATING EXPENSES					
WAGES + SALARIES	58000.00		13600.00		71600.00
FRINGE BENEFITS	5800.00		1360.00		11320.00
BOXES	14494.32				14494.32
HYDRO COSTS	5000.00				5000.00
ICE EXPENSES			26400.00		26400.00
OFFICE OVERHEAD	45020.00				45020.00
CAPITAL ACCOUNT					
INTEREST	3017.35		553.52		3570.89
DEPRECIATION	37716.92		6919.03		44635.95
NET PROFIT OR LOSS	154554.00	77680.38	48832.55	15536.08	-110170.10**

** DIFFERENCE OF THIS PROFIT LOSS FIGURE AND PREVIOUS ONE DUE TO ROUNDING AND CULLAGE

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                                          TABLE 1 SOUTH INDIAN LAKE FISHERMEN
                                   ASSUMPTION: QUOTA RAISED TO  1050000(S)  450000(W)

LENGTH OF WINTER SEASON 3.5 MONTHS                                   GROSS REVENUE    GROSS COSTS    NET REVENUES
TOTAL CATCH    449942.  NO. OF FISHERMEN 45.          PER FISHERMAN        1821.02        1139.96          681.05
QUOTA SIZE  WHITEFISH   405000.  WALLEYE     45000.   PER POUND               0.18           0.11            0.07
                                                      TOTAL               81945.80       51298.39        30647.40
FISHING METHOD
LAKESIDE CULLAGE


LENGTH OF SUMMER SEASON 4.5 MONTHS                                   GROSS REVENUE    GROSS COSTS    NET REVENUES
TOTAL CATCH  1013677.  NO. OF FISHERMEN104.           PER FISHERMAN        1738.60         586.98         1151.62
QUOTA SIZE  WHITEFISH   945000.  WALLEYE    105000.   PER POUND               0.18           0.06            0.12
                                                      TOTAL              180814.70       61046.29       119768.41
FISHING METHOD
LAKESIDE CULLAGE
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                                           TABLE 2 LEAF RAPIDS PLANT COSTS AND REVENUES
                                             ASSUMPTION: QUOTA RAISED TO  1050000(S)  450000(W)

I. VARIABLE COSTS                    (1)                (2)                  (3)                    (4)                 (5)
                               CO-OP PAYMENTS  +  VOLUME INCREMENT  +  TRANSPORTATION TO  +  TRANSPORTATION TO  =  TOTAL VARIABLE
                                TO FISHERMEN           COSTS             LEAF RAPIDS             TRANSCONA             COSTS
WINTER SEASON
TOTAL COSTS                      81945.797          29468.875             8998.850              28076.411           148489.933
  PER LB. THE PLANT SELLS*           0.192              0.069                0.021                  0.066                0.347
  PER LB. THE PLANT BUYS             0.182              0.065                0.015                  0.065                0.330
SUMMER SEASON
TOTAL COSTS                     180814.698          51259.965            15205.157              57323.443           304603.264
  PER LB. THE PLANT SELLS*           0.211              0.060                0.018                  0.067                0.356
  PER LB. THE PLANT BUYS             0.178              0.051                0.015                  0.065                0.300
ANNUAL
TOTAL COSTS                     262760.495          80728.840            24204.007              85399.855           453093.197
  PER LB. THE PLANT SELLS*           0.205              0.063                0.019                  0.067                0.353
  PER LB. THE PLANT BUYS             0.180              0.055                0.015                  0.065                0.310
--------------------------------------------------------------------------------------------------------------------------------

II. FIXED COSTS                                    (6)                   (7)                 (8)
                                        MINIMUM OPERATION COSTS  +  CAPITAL COSTS  =  TOTAL FIXED COSTS
WINTER SEASON
  TOTAL COSTS                                39616.387             19306.871           58923.258
  PER LB. THE PLANT SELLS                        0.093                 0.045               0.138
  PER LB. THE PLANT BUYS                         0.089                 0.043               0.131
SUMMER SEASON
  TOTAL COSTS                                51163.602             28899.949           80063.551
  PER LB. THE PLANT SELLS                        0.060                 0.034               0.094
  PER LB. THE PLANT BUYS                         0.050                 0.029               0.079
ANNUAL
  TOTAL COSTS                                90779.989             48206.820          138986.809
  PER LB. THE PLANT SELLS                        0.071                 0.038               0.109
  PER LB. THE PLANT BUYS                         0.062                 0.033               0.095
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III. NET PROFIT                                    (9)               (10)=(5)+(8)       (11)=(9)-(10)
                                        REVENUES PAID TO CO-OP  -   TOTAL COSTS   =  CO-OP PROFIT OR LOSS
WINTER SEASON
  TOTAL COSTS                               165544.461            207413.191          -41868.730
  PER LB. THE PLANT SELLS                        0.387                 0.485              -0.098
  PER LB. THE PLANT BUYS                         0.368                 0.461              -0.093
SUMMER SEASON
  TOTAL COSTS                               323677.928            384666.814          -60988.886
  PER LB. THE PLANT SELLS                        0.378                 0.450              -0.071
  PER LB. THE PLANT BUYS                         0.319                 0.379              -0.060
ANNUAL
  TOTAL COSTS                               489222.390            592080.005         -102857.615
  PER LB. THE PLANT SELLS                        0.381                 0.461              -0.080
  PER LB. THE PLANT BUYS                         0.334                 0.405              -0.070

WINTER     TRANSPORTATION METHOD: TO PLANT  BOMBARDIER      TO CORP.  TRUCK RAIL
SUMMER     TRANSPORTATION METHOD: TO PLANT  FREIGHT BOAT    TO CORP.  TRUCK RAIL
OPERATIONS
VOLUME (LB.)        1463620.     EMPLOYEES       21.0             EMPLOYEE INCOME  103200.
WINTER     QUANTITY CULLED (LB.)     LAKESIDE 192832.  PLANT      17998.            CORPORATION       4319.
SUMMER     QUANTITY CULLED (LB.)     LAKESIDE 434433.  PLANT     131778.            CORPORATION      26457.
* ACTUAL COST PER POUND SOLD PLUS COST OF CULLED FISH PER POUND SOLD
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TABLE 5

SOUTH INDIAN LAKE CO-OP FISHERIES LTD. REVENUE AND COST STATEMENT

	PLANT		LAKE OPERATIONS		TOTALS
	DEBIT	CREDIT	DEBIT	CREDIT	
REVENUES					
AGENCY FEES		117085.50			117085.50
BOX ALLOWANCE		29272.39			29272.39
ICE DEDUCTION				14636.20	14636.20
CAMP DEDUCTION				14636.20	14636.20
TOTAL GROSS REVENUES		146361.80		29272.39	175634.20
OPERATING EXPENSES					
WAGES + SALARIES	70800.00		16400.00		87200.00
FRINGE BENEFITS	7080.00		1640.00		12880.00
BOXES	26768.84				26768.84
HYDRO COSTS	5000.00				5000.00
ICE EXPENSES			26400.00		26400.00
OFFICE OVERHEAD	45020.00				45020.00
CAPITAL ACCOUNT					
INTEREST	3017.35		553.52		3570.88
DEPRECIATION	37716.92		6919.03		44635.95
NET PROFIT OR LOSS	168634.00	146361.80	51912.55	29272.39	-44912.36**

** DIFFERENCE OF THIS PROFIT LOSS FIGURE AND PREVIOUS ONE DUE TO ROUNDING AND CULLAGE

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                              TABLE 1 SOUTH INDIAN LAKE FISHERMEN
                      ASSUMPTION: QUOTA RAISED TO 1300000(S)  720000(W)

LENGTH OF WINTER SEASON 3.5 MONTHS                                 GROSS REVENUE   GROSS COSTS   NET REVENUES
TOTAL CATCH   719908.  NO. OF FISHERMEN 72.          PER FISHERMAN      1821.02        1139.96        681.05
QUOTA SIZE  WHITEFISH   648000.  WALLEYE    72000.   PER POUND             0.18           0.11          0.07
                                                     TOTAL            131113.26       82077.44      49035.83
FISHING METHOD
LAKESIDE CULLAGE


LENGTH OF SUMMER SEASON 4.5 MONTHS                                 GROSS REVENUE   GROSS COSTS   NET REVENUES
TOTAL CATCH  1267096.  NO. OF FISHERMEN130.          PER FISHERMAN      1738.60         586.98       1151.62
QUOTA SIZE  WHITEFISH  1170000.  WALLEYE   130000.   PER POUND             0.18           0.06          0.12
                                                     TOTAL            226018.36       76307.85     149710.50

FISHING METHOD
LAKESIDE CULLAGE
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                              TABLE 2 LEAF RAPIDS PLANT COSTS AND REVENUES
                               ASSUMPTION: QUOTA RAISED TO 1300000(S)  720000(W)

 I. VARIABLE COSTS
                                   (1)                (2)                (3)                    (4)                  (5)
                             CO-OP PAYMENTS  +  VOLUME INCREMENT  +  TRANSPORTATION TO  +  TRANSPORTATION TO  =  TOTAL VARIABLE
                              TO FISHERMEN           COSTS             LEAF RAPIDS            TRANSCONA             COSTS
 WINTER SEASON
 TOTAL COSTS                  131113.263          40812.215          14398.163              44922.260           231245.898
   PER LB. THE PLANT SELLS*       0.192              0.060              0.021                  0.066                0.338
   PER LB. THE PLANT BUYS         0.182              0.057              0.015                  0.065                0.321
 SUMMER SEASON
 TOTAL COSTS                  226018.357          63589.465          19006.444              71654.302           380268.570
   PER LB. THE PLANT SELLS*       0.211              0.059              0.018                  0.067                0.356
   PER LB. THE PLANT BUYS         0.178              0.050              0.015                  0.065                0.300
 ANNUAL
 TOTAL COSTS                  357131.620         104401.680          33404.607             116576.563           611514.469
   PER LB. THE PLANT SELLS*       0.204              0.060              0.019                  0.066                0.349
   PER LB. THE PLANT BUYS         0.180              0.053              0.015                  0.065                0.308
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 II. FIXED COSTS
                                                 (6)                      (7)                (8)
                                     MINIMUM OPERATION COSTS  +  CAPITAL COSTS  =  TOTAL FIXED COSTS
 WINTER SEASON
   TOTAL COSTS                                39616.397              19306.871          58923.258
   PER LB. THE PLANT SELLS                        0.058                  0.028              0.086
   PER LB. THE PLANT BUYS                         0.055                  0.027              0.082
 SUMMER SEASON
   TOTAL COSTS                                51163.602              28899.949          80063.551
   PER LB. THE PLANT SELLS                        0.048                  0.027              0.075
   PER LB. THE PLANT BUYS                         0.040                  0.023              0.063
 ANNUAL
   TOTAL COSTS                                90779.999              48206.820         138986.809
   PER LB. THE PLANT SELLS                        0.052                  0.027              0.079
   PER LB. THE PLANT BUYS                         0.046                  0.024              0.070
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 III. NET PROFIT
                                            (9)                 (10)=(5)+(8)        (11)=(9)-(10)
                                   REVENUES PAID TO CO-OP   -   TOTAL COSTS    =   CO-OP PROFIT OR LOSS
 WINTER SEASON
   TOTAL COSTS                            264871.157             290169.156           -25297.999
   PER LB. THE PLANT SELLS                    0.387                  0.424               -0.037
   PER LB. THE PLANT BUYS                     0.368                  0.403               -0.035
 SUMMER SEASON
   TOTAL COSTS                            404597.402             460332.121           -55734.719
   PER LB. THE PLANT SELLS                    0.378                  0.430               -0.052
   PER LB. THE PLANT BUYS                     0.319                  0.363               -0.044
 ANNUAL
   TOTAL COSTS                            669468.559             750501.277           -81032.718
   PER LB. THE PLANT SELLS                    0.382                  0.428               -0.046
   PER LB. THE PLANT BUYS                     0.337                  0.378               -0.041

 WINTER     TRANSPORTATION METHOD: TO PLANT  BOMBARDIER       TO CORP.  TRUCK RAIL
 SUMMER     TRANSPORTATION METHOD: TO PLANT  FREIGHT BOAT     TO CORP.  TRUCK RAIL
 OPERATIONS
 VOLUME (LB.)          1987034.     EMPLOYEES        25.0               EMPLOYEE INCOME  116000.
 WINTER     QUANTITY CULLED (LB.)      LAKESIDE 309532.  PLANT      28796.              CORPORATION        6911.
 SUMMER     QUANTITY CULLED (LB.)      LAKESIDE 543041.  PLANT     164723.              CORPORATION       33071.
 * ACTUAL COST PER POUND SOLD PLUS COST OF CULLED FISH PER POUND SOLD
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TABLE 5

SOUTH INDIAN LAKE CO-OP FISHERIES LTD. REVENUE AND COST STATEMENT

	PLANT		LAKE OPERATIONS		TOTALS
	DEBIT	CREDIT	DEBIT	CREDIT	
REVENUES					
AGENCY FEES		158960.30			158960.30
BOX ALLOWANCE		39740.09			39740.09
ICE DEDUCTION				19870.05	19870.05
CAMP DEDUCTION				19870.05	19870.05
TOTAL GROSS REVENUES		198700.30		39740.09	238440.30
OPERATING EXPENSES					
WAGES + SALARIES	83600.00		16400.00		100000.00
FRINGE BENEFITS	8361.00		1640.00		14160.00
BOXES	36361.68				36361.68
HYDRO COSTS	5000.00				5000.00
ICE EXPENSES			26400.00		26400.00
OFFICE OVERHEAD	45020.00				45020.00
CAPITAL ACCOUNT					
INTEREST	3017.35		553.52		3570.88
DEPRECIATION	37716.92		6919.03		44635.95
NET PROFIT OR LOSS	182714.00	198700.30	51912.55	39740.09	3813.83**

** DIFFERENCE OF THIS PROFIT LOSS FIGURE AND PREVIOUS ONE DUE TO ROUNDING AND CULLAGE

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                                        TABLE 1 SOUTH INDIAN LAKE FISHERY
                                 ASSUMPTION: FISH TRANSPORTED BY AIR TO LEAF RAPIDS ( WINTER )

LENGTH OF WINTER SEASON 3.5 MONTHS
TOTAL CATCH    359954.  NO. OF FISHERMEN 36.                      GROSS REVENUE    GROSS COSTS    NET REVENUES
QUOTA SIZE  WHITEFISH   360000.  WALLEYE     40000.   PER FISHERMAN   1821.02        1139.96         681.05
                                                      PER POUND          0.18           0.11           0.07
FISHING METHOD                                        TOTAL          65556.63       41038.72       24517.92
LAKESIDE CULLAGE

LENGTH OF SUMMER SEASON 4.5 MONTHS                                GROSS REVENUE    GROSS COSTS    NET REVENUES
TOTAL CATCH    760259.  NO. OF FISHERMEN 78.          PER FISHERMAN   1738.60         586.98        1151.62
QUOTA SIZE  WHITEFISH   720000.  WALLEYE     80000.   PER POUND          0.18           0.06           0.12
                                                      TOTAL         135611.03       45784.71       89826.31
FISHING METHOD
LAKESIDE CULLAGE
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                         TABLE 2 LEAF RAPIDS PLANT COSTS AND REVENUES
                  ASSUMPTION: FISH TRANSPORTED BY AIR TO LEAF RAPIDS ( WINTER )

I. VARIABLE COSTS               (1)                 (2)                  (3)                    (4)                  (5)
                          CO-OP PAYMENTS  +  VOLUME INCREMENT  +  TRANSPORTATION TO  +  TRANSPORTATION TO  =  TOTAL VARIABLE
                           TO FISHERMEN           COSTS              LEAF RAPIDS            TRANSCONA              COSTS
WINTER SEASON
TOTAL COSTS                  65556.534          21581.109            30596.091             22461.131            140194.966
  PER LB. THE PLANT SELLS*       0.192              0.063                0.089                 0.066                 0.410
  PER LB. THE PLANT BUYS         0.192              0.060                0.015                 0.065                 0.389
SUMMER SEASON
TOTAL COSTS                 135611.027          42890.477            11403.869             42992.535            232897.957
  PER LB. THE PLANT SELLS*       0.211              0.067                0.018                 0.067                 0.363
  PER LB. THE PLANT BUYS         0.178              0.056                0.015                 0.065                 0.306
ANNUAL
TOTAL COSTS                 201167.661          64471.586            41999.960             65453.716            373092.923
  PER LB. THE PLANT SELLS*       0.205              0.066                0.043                 0.067                 0.379
  PER LB. THE PLANT BUYS         0.180              0.059                0.015                 0.065                 0.333
--------------------------------------------------------------------------------------------------------------------------

II. FIXED COSTS                         (6)                      (7)                  (8)
                               MINIMUM OPERATION COSTS  +  CAPITAL COSTS  =  TOTAL FIXED COSTS
WINTER SEASON
  TOTAL COSTS                         39616.387              19306.971            58923.258
  PER LB. THE PLANT SELLS                 0.116                  0.055                0.172
  PER LB. THE PLANT BUYS                  0.110                  0.054                0.164
SUMMER SEASON
  TOTAL COSTS                         51163.602              28899.949            80063.551
  PER LB. THE PLANT SELLS                 0.080                  0.045                0.125
  PER LB. THE PLANT BUYS                  0.067                  0.038                0.105
ANNUAL
  TOTAL COSTS                         90779.989              48206.920           138986.809
  PER LB. THE PLANT SELLS                 0.092                  0.049                0.141
  PER LB. THE PLANT BUYS                  0.081                  0.043                0.124
--------------------------------------------------------------------------------------------------------------------------

III. NET PROFIT                         (9)                 (10)=(5)+(8)         (11)=(9)-(10)
                               REVENUES PAID TO CO-OP  -  TOTAL COSTS  =  CO-OP PROFIT OR LOSS
WINTER SEASON
  TOTAL COSTS                        132435.576             199118.224           -66682.645
  PER LB. THE PLANT SELLS                 0.387                  0.582               -0.195
  PER LB. THE PLANT BUYS                  0.363                  0.553               -0.185
SUMMER SEASON
  TOTAL COSTS                        242758.460             312961.508           -70203.048
  PER LB. THE PLANT SELLS                 0.378                  0.488               -0.109
  PER LB. THE PLANT BUYS                  0.319                  0.412               -0.092
ANNUAL
  TOTAL COSTS                        375194.039             512079.732          -136885.693
  PER LB. THE PLANT SELLS                 0.381                  0.521               -0.139
  PER LB. THE PLANT BUYS                  0.335                  0.457               -0.122

WINTER     TRANSPORTATION METHOD: TO PLANT  AIR             TO CORP.  TRUCK RAIL
SUMMER     TRANSPORTATION METHOD: TO PLANT  FREIGHT BOAT    TO CORP.  TRUCK RAIL
OPERATIONS
VOLUME (LB.)       1120212.     EMPLOYEES        18.0            EMPLOYEE INCOME   94000.
WINTER     QUANTITY CULLED (LB.)     LAKESIDE 154266.  PLANT     14398.         CORPORATION       3456.
SUMMER     QUANTITY CULLED (LB.)     LAKESIDE 325824.  PLANT     98834.         CORPORATION      19843.
* ACTUAL COST PER POUND SOLD PLUS COST OF CULLED FISH PER POUND SOLD
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TABLE 5

SOUTH INDIAN LAKE CO-OP FISHERIES LTD. REVENUE AND COST STATEMENT

	PLANT		LAKE OPERATIONS		TOTALS
	DEBIT	CREDIT	DEBIT	CREDIT	
REVENUES					
AGENCY FEES		89616.89			89616.88
BOX ALLOWANCE		22404.23			22404.23
ICE DEDUCTION				11202.12	11202.12
CAMP DEDUCTION				11202.12	11202.12
TOTAL GROSS REVENUES		112021.00		22404.24	134425.10
OPERATING EXPENSES					
WAGES + SALARIES	64500.00		13500.00		78000.00
FRINGE BENEFITS	6440.00		1360.00		11960.00
BOXES	20631.59				20631.59
HYDRO COSTS	5000.00				5000.00
ICE EXPENSES			26400.00		26400.00
OFFICE OVERHEAD	45020.00				45020.00
CAPITAL ACCOUNT					
INTEREST	3017.35		553.52		3570.88
DEPRECIATION	37716.92		6919.03		44635.95
NET PROFIT OR LOSS	161594.00	112021.00	48832.55	22404.24	-76001.31**

** DIFFERENCE OF THIS PROFIT LOSS FIGURE AND PREVIOUS ONE DUE TO ROUNDING AND CULLAGE

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                                   TABLE 1 SOUTH INDIAN LAKE FISHERMEN
                              ASSUMPTION: FISH TRANSPORTED BY TRUCK TO TRANSCONA

LENGTH OF WINTER SEASON 3.5 MONTHS                                  GROSS REVENUE    GROSS COSTS    NET REVENUES
TOTAL CATCH    359954.  NO. OF FISHERMEN 36.             PER FISHERMAN     1821.02        1139.96         691.05
QUOTA SIZE  WHITEFISH   360000.  WALLEYE     40000.      PER POUND            0.18           0.11           0.07
                                                          TOTAL            65556.63       41038.72       24517.92
FISHING METHOD
LAKESIDE CULLAGE

LENGTH OF SUMMER SEASON 4.5 MONTHS                                  GROSS REVENUE    GROSS COSTS    NET REVENUES
TOTAL CATCH    760258.  NO. OF FISHERMEN 78.             PER FISHERMAN     1738.60         586.98        1151.62
QUOTA SIZE  WHITEFISH   720000.  WALLEYE     80000.      PER POUND            0.18           0.06           0.12
                                                          TOTAL           135611.03       45784.71       89826.31
FISHING METHOD
LAKESIDE CULLAGE
```

TABLE 2.1 LEAF RAPIDS PLANT COSTS AND REVENUES
ASSUMPTIONS: FISH TRANSPORTED BY TRUCK TO TRANSCONA

I. VARIABLE COSTS	(1) CO-OP PAYMENTS TO FISHERMEN +	(2) VOLUME INCREMENT COSTS +	(3) TRANSPORTATION TO LEAF RAPIDS +	(4) TRANSPORTATION TO TRANSCONA =	(5) TOTAL VARIABLE COSTS
WINTER SEASON					
TOTAL COSTS	65556.634	21581.109	7199.080	12094.455	106431.279
PER LB. THE PLANT SELLS*	0.192	0.063	0.021	0.035	0.311
PER LB. THE PLANT BUYS	0.182	0.060	0.015	0.035	0.296
SUMMER SEASON					
TOTAL COSTS	135611.027	42850.477	11403.869	23149.954	213055.226
PER LB. THE PLANT SELLS*	0.211	0.067	0.018	0.036	0.332
PER LB. THE PLANT BUYS	0.178	0.056	0.015	0.035	0.280
ANNUAL					
TOTAL COSTS	201167.661	64471.586	18602.949	35244.309	319486.505
PER LB. THE PLANT SELLS*	0.205	0.066	0.019	0.036	0.325
PER LB. THE PLANT BUYS	0.180	0.059	0.015	0.035	0.285

II. FIXED COSTS	(6) MINIMUM OPERATION COSTS +	(7) CAPITAL COSTS =	(8) TOTAL FIXED COSTS
WINTER SEASON			
TOTAL COSTS	39616.387	19306.871	58923.258
PER LB. THE PLANT SELLS	0.116	0.056	0.172
PER LB. THE PLANT BUYS	0.110	0.054	0.164
SUMMER SEASON			
TOTAL COSTS	51163.602	28899.949	80063.551
PER LB. THE PLANT SELLS	0.080	0.045	0.125
PER LB. THE PLANT BUYS	0.067	0.038	0.105
ANNUAL			
TOTAL COSTS	90779.988	48206.820	139986.809
PER LB. THE PLANT SELLS	0.092	0.049	0.141
PER LB. THE PLANT BUYS	0.081	0.043	0.124

III. NET PROFIT	(9) REVENUES PAID TO CO-OP -	(10)=(5)+(8) TOTAL COSTS =	(11)=(9)-(10) CO-OP PROFIT OR LOSS
WINTER SEASON			
TOTAL COSTS	132435.578	165354.537	-32918.958
PER LB. THE PLANT SELLS	0.387	0.483	-0.096
PER LB. THE PLANT BUYS	0.368	0.459	-0.091
SUMMER SEASON			
TOTAL COSTS	242758.460	293118.776	-50360.316
PER LB. THE PLANT SELLS	0.378	0.457	-0.078
PER LB. THE PLANT BUYS	0.319	0.386	-0.066
ANNUAL			
TOTAL COSTS	375194.039	458473.313	-83279.274
PER LB. THE PLANT SELLS	0.381	0.466	-0.085
PER LB. THE PLANT BUYS	0.335	0.409	-0.074

WINTER TRANSPORTATION METHOD: TO PLANT BOMBARDIER TO CORP. TRUCK TRUCK
SUMMER TRANSPORTATION METHOD: TO PLANT FREIGHT BOAT TO CORP. TRUCK TRUCK

OPERATIONS
VOLUME (LB.) 1120212. EMPLOYEES 18.0 EMPLOYEE INCOME 94000.
WINTER QUANTITY CULLED (LB.) LAKESIDE 154266. PLANT 14599. CORPORATION 3455.
SUMMER QUANTITY CULLED (LB.) LAKESIDE 325824. PLANT 98834. CORPORATION 19843.

* ACTUAL COST PER POUND SOLD PLUS COST OF CULLED FISH PER POUND SOLD

TABLE 5

SOUTH INDIAN LAKE CO-OP FISHERIES LTD. REVENUE AND COST STATEMENT

	PLANT		LAKE OPERATIONS		TOTALS
	DEBIT	CREDIT	DEBIT	CREDIT	
REVENUES					
AGENCY FEES		89616.88			89616.88
BOX ALLOWANCE		22404.23			22404.23
ICE DEDUCTION				11202.12	11202.12
CAMP DEDUCTION				11202.12	11202.12
TOTAL GROSS REVENUES		112021.00		22404.24	134425.10
OPERATING EXPENSES					
WAGES + SALARIES	64400.00		13600.00		78000.00
FRINGE BENEFITS	6440.00		1360.00		11960.00
BOXES	20631.59				20631.59
HYDRO COSTS	5000.00				5000.00
ICE EXPENSES			26400.00		26400.00
OFFICE OVERHEAD	45020.00				45020.00
CAPITAL ACCOUNT					
INTEREST	3017.35		553.52		3570.88
DEPRECIATION	37716.92		6919.03		44635.95
NET PROFIT OR LOSS	161594.00	112021.00	48832.55	22404.24	-76001.31**

** DIFFERENCE OF THIS PROFIT LOSS FIGURE AND PREVIOUS ONE DUE TO ROUNDING AND CULLAGE

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                         TABLE 1 SOUTH INDIAN LAKE FISHERMEN
                        ASSUMPTION: ALL ONE MAN YAWLS IN SUMMER

LENGTH OF WINTER SEASON 3.5 MONTHS                                   GROSS REVENUE   GROSS COSTS   NET REVENUES
TOTAL CATCH   359954.  NO. OF FISHERMEN 36.         PER FISHERMAN       1821.02        1139.96        681.05
QUOTA SIZE  WHITEFISH   3[illegible].  WALLEYE    40000.   PER POUND              0.19           0.11          0.07
                                                    TOTAL              65556.63       41038.72       24517.92
FISHING METHOD
LAKESIDE CULLAGE


LENGTH OF SUMMER SEASON 4.5 MONTHS                                   GROSS REVENUE   GROSS COSTS   NET REVENUES
TOTAL CATCH   811411.  NO. OF FISHERMEN 64.         PER FISHERMAN       2261.49         927.02       1334.47
QUOTA SIZE  WHITEFISH   720000.  WALLEYE    80000.  PER POUND              0.18           0.07          0.11
                                                    TOTAL             144735.40       59329.23       85406.16
FISHING METHOD
LAKESIDE CULLAGE
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                                        TABLE 2 LEAF RAPIDS PLANT COSTS AND REVENUES
                                          ASSUMPTIONS: ALL ONE MAN YAWLS IN SUMMER

I. VARIABLE COSTS                   (1)                  (2)                    (3)                      (4)                   (5)
                              CO-OP PAYMENTS   +  VOLUME INCREMENT   +  TRANSPORTATION TO   +  TRANSPORTATION TO   =  TOTAL VARIABLE
                              TO FISHERMEN              COSTS               LEAF RAPIDS              TRANSCONA              COSTS
WINTER SEASON
TOTAL COSTS                      65596.134            21541.109              7199.083               22461.131            116797.455
  PER LB. THE PLANT SELLS*           0.192                0.063                 0.021                   0.066                0.341
  PER LB. THE PLANT BUYS             0.182                0.060                 0.015                   0.065                0.324
SUMMER SEASON
TOTAL COSTS                     144735.397            47740.535             12171.159               45885.271            250532.362
  PER LB. THE PLANT SELLS*           0.211                0.070                 0.018                   0.067                0.366
  PER LB. THE PLANT BUYS             0.174                0.059                 0.015                   0.065                0.309
ANNUAL
TOTAL COSTS                     210292.031            69321.645             19370.240               68346.402            367330.317
  PER LB. THE PLANT SELLS*           0.205                0.068                 0.019                   0.067                0.358
  PER LB. THE PLANT BUYS             0.180                0.059                 0.015                   0.065                0.314
-----------------------------------------------------------------------------------------------------------------------------------

II. FIXED COSTS                                   (6)                       (7)                (8)
                                       MINIMUM OPERATION COSTS   +   CAPITAL COSTS   =   TOTAL FIXED COSTS
WINTER SEASON
  TOTAL COSTS                                  39616.387                19306.871           58923.259
  PER LB. THE PLANT SELLS                          0.115                    0.056               0.172
  PER LB. THE PLANT BUYS                           0.110                    0.054               0.164
SUMMER SEASON
  TOTAL COSTS                                  51163.602                28899.949           80063.551
  PER LB. THE PLANT SELLS                          0.075                    0.042               0.117
  PER LB. THE PLANT BUYS                           0.063                    0.036               0.099
ANNUAL
  TOTAL COSTS                                  90779.989                48206.820          138986.809
  PER LB. THE PLANT SELLS                          0.088                    0.047               0.135
  PER LB. THE PLANT BUYS                           0.077                    0.041               0.119
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III. NET PROFIT                                   (9)                   (10)=(5)+(8)        (11)=(9)-(10)
                                       REVENUES PAID TO CO-OP    -   TOTAL COSTS   =   CO-OP PROFIT OR LOSS
WINTER SEASON
  TOTAL COSTS                                 132435.578               175721.212          -43285.634
  PER LB. THE PLANT SELLS                          0.387                    0.514              -0.127
  PER LB. THE PLANT BUYS                           0.367                    0.488              -0.120
SUMMER SEASON
  TOTAL COSTS                                 259092.065               330595.913          -71503.848
  PER LB. THE PLANT SELLS                          0.379                    0.483              -0.104
  PER LB. THE PLANT BUYS                           0.319                    0.407              -0.088
ANNUAL
  TOTAL COSTS                                 391527.648               506317.126         -114789.478
  PER LB. THE PLANT SELLS                          0.381                    0.493              -0.112
  PER LB. THE PLANT BUYS                           0.334                    0.432              -0.098

WINTER    TRANSPORTATION METHOD: TO PLANT  BOMBARDIER      TO CORP.  TRUCK RAIL
SUMMER    TRANSPORTATION METHOD: TO PLANT  FREIGHT BOAT    TO CORP.  TRUCK RAIL
OPERATIONS
VOLUME (LB.)        1171365.     EMPLOYEES        19.0                 EMPLOYEE INCOME   97600.
WINTER    QUANTITY CULLED (LB.)      LAKESIDE 154265.  PLANT       14398.              CORPORATION        3456.
SUMMER    QUANTITY CULLED (LB.)      LAKESIDE 347747.  PLANT      105483.              CORPORATION       21178.
* ACTUAL COST PER POUND SOLD PLUS COST OF CULLED FISH PER POUND SOLD
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TABLE 3

SOUTH INDIAN LAKE CO-OP FISHERIES LTD. REVENUE AND COST STATEMENT

	PLANT		LAKE OPERATIONS		TOTALS
	DEBIT	CREDIT	DEBIT	CREDIT	
REVENUES					
AGENCY FEES		93709.13			93709.13
BOX ALLOWANCE		23427.29			23427.29
ICE DEDUCTION				11713.64	11713.64
CAMP DEDUCTION				11713.64	11713.64
TOTAL GROSS REVENUES		117136.30		23427.29	140563.59
OPERATING EXPENSES					
WAGES + SALARIES	59000.00		13600.00		91600.00
FRINGE BENEFITS	6800.00		1360.00		[illegible]
BOXES	21521.65				21521.65
HYDRO COSTS	5000.00				5000.00
ICE EXPENSES			26400.09		26400.09
OFFICE OVERHEAD	45020.00				45020.00
CAPITAL ACCOUNT					
INTEREST	3017.35		553.52		3570.89
DEPRECIATION	37716.92		6919.03		44635.95
NET PROFIT OR LOSS	165554.00	117136.30	48832.55	23427.29	-73822.94**

** DIFFERENCE OF THIS PROFIT LOSS FIGURE AND PREVIOUS ONE DUE TO ROUNDING AND CULLAGE

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                                TABLE 1 SOUTH INDIAN LAKE FISHERMEN
                              ASSUMPTION: 2 MAN YAWLS (S)  SKIDOO-BOMBARDIER (W)

LENGTH OF WINTER SEASON 3.5 MONTHS                                GROSS REVENUE   GROSS COSTS   NET REVENUES
TOTAL CATCH   412114.  NO. OF FISHERMEN 42.          PER FISHERMAN    1787.05        1190.40        596.65
QUOTA SIZE  WHITEFISH   360000.  WALLEYE     40000.  PER POUND           0.16           0.12          0.06
                                                     TOTAL           75056.30       49996.81      25059.49
FISHING METHOD
LAKESIDE CULLAGE


LENGTH OF SUMMER SEASON 4.5 MONTHS                                GROSS REVENUE   GROSS COSTS   NET REVENUES
TOTAL CATCH   759355.  NO. OF FISHERMEN 90.          PER FISHERMAN    1506.21         435.86       1070.35
QUOTA SIZE  WHITEFISH   720000.  WALLEYE     80000.  PER POUND           0.18           0.05          0.13
                                                     TOTAL          135558.74       39227.08      96331.66
FISHING METHOD
LAKESIDE CULLAGE
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TABLE 2 LEAF RAPIDS PLANT COSTS AND REVENUES
ASSUMPTION: 2 MAN YAWLS (S) SKIDOO-BOMBARDIER (W)

I. VARIABLE COSTS	(1) CO-OP PAYMENTS TO FISHERMEN	+	(2) VOLUME INCREMENT COSTS	+	(3) TRANSPORTATION TO LEAF RAPIDS	+	(4) TRANSPORTATION TO TRANSCONA	=	(5) TOTAL VARIABLE COSTS
WINTER SEASON									
TOTAL COSTS	75056.309		22542.542		8242.283		25715.924		131597.090
PER LB. THE PLANT SELLS*	0.192		0.058		0.021		0.066		0.336
PER LB. THE PLANT BUYS	0.182		0.055		0.015		0.065		0.319
SUMMER SEASON									
TOTAL COSTS	135558.738		42885.371		11399.472		42976.010		232819.591
PER LB. THE PLANT SELLS*	0.211		0.057		0.018		0.057		0.363
PER LB. THE PLANT BUYS	0.178		0.056		0.015		0.065		0.306
ANNUAL									
TOTAL COSTS	210615.039		65457.953		19641.755		68691.934		364416.681
PER LB. THE PLANT SELLS*	0.204		0.053		0.019		0.066		0.353
PER LB. THE PLANT BUYS	0.190		0.056		0.015		0.065		0.311

II. FIXED COSTS	(6) MINIMUM OPERATION COSTS	+	(7) CAPITAL COSTS	=	(8) TOTAL FIXED COSTS
WINTER SEASON					
TOTAL COSTS	39616.387		19306.871		58923.258
PER LB. THE PLANT SELLS	0.101		0.049		0.150
PER LB. THE PLANT BUYS	0.096		0.047		0.143
SUMMER SEASON					
TOTAL COSTS	51163.602		28899.949		80063.551
PER LB. THE PLANT SELLS	0.080		0.045		0.125
PER LB. THE PLANT BUYS	0.067		0.038		0.105
ANNUAL					
TOTAL COSTS	90779.989		48206.820		138986.809
PER LB. THE PLANT SELLS	0.088		0.047		0.135
PER LB. THE PLANT BUYS	0.077		0.041		0.119

III. NET PROFIT	(9) REVENUES PAID TO CO-OP	-	(10)=(5)+(8) TOTAL COSTS	=	(11)=(9)-(10) CO-OP PROFIT OR LOSS
WINTER SEASON					
TOTAL COSTS	151626.532		190520.348		-38893.815
PER LB. THE PLANT SELLS	0.387		0.486		-0.099
PER LB. THE PLANT BUYS	0.368		0.462		-0.094
SUMMER SEASON					
TOTAL COSTS	242664.870		312883.142		-70218.272
PER LB. THE PLANT SELLS	0.374		0.483		-0.109
PER LB. THE PLANT BUYS	0.319		0.412		-0.092
ANNUAL					
TOTAL COSTS	394291.402		503403.489		-109112.087
PER LB. THE PLANT SELLS	0.382		0.487		-0.106
PER LB. THE PLANT BUYS	0.335		0.429		-0.093

WINTER TRANSPORTATION METHOD: TO PLANT BOMBARDIER TO CORP. TRUCK RAIL
SUMMER TRANSPORTATION METHOD: TO PLANT FREIGHT BOAT TO CORP. TRUCK RAIL

OPERATIONS

VOLUME (LB.) 1172079. EMPLOYEES 18.0 EMPLOYEE INCOME 94000.

WINTER	QUANTITY CULLED (LB.)	LAKESIDE	176623.	PLANT	15485.	CORPORATION	3956.
SUMMER	QUANTITY CULLED (LB.)	LAKESIDE	325699.	PLANT	98795.	CORPORATION	19835.

* ACTUAL COST PER POUND SOLD PLUS COST OF CULLED FISH PER POUND SOLD

TABLE 5

SOUTH INDIAN LAKE CO-OP FISHERIES LTD. REVENUE AND COST STATEMENT

	PLANT		LAKE OPERATIONS		TOTALS
	DEBIT	CREDIT	DEBIT	CREDIT	
REVENUES					
AGENCY FEES		93766.25			93766.25
BOX ALLOWANCE		23441.58			23441.59
ICE DEDUCTION				11720.79	11720.79
CAMP DEDUCTION				11720.79	11720.79
TOTAL GROSS REVENUES		117207.80		23441.58	140649.30
OPERATING EXPENSES					
WAGES + SALARIES	64400.00		13600.00		78000.00
FRINGE BENEFITS	6600.00		1360.00		11960.00
BOXES	21627.96				21627.96
HYDRO COSTS	5000.00				5000.00
ICE EXPENSES			26400.00		26400.00
OFFICE OVERHEAD	45020.00				45020.00
CAPITAL ACCOUNT					
INTEREST	3017.35		551.52		3570.88
DEPRECIATION	37716.92		6919.03		44635.95
NET PROFIT OR LOSS	161534.00	117207.80	48832.55	23441.58	-69777.19**

** DIFFERENCE OF THIS PROFIT LOSS FIGURE AND PREVIOUS ONE DUE TO ROUNDING AND CULLAGE

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                                        TABLE 1 SOUTH INDIAN LAKE FISHERMEN
                                   ASSUMPTION: CULLAGE RATES REDUCED BY 50 PER CENT

LENGTH OF WINTER SEASON 3.5 MONTHS
TOTAL CATCH   359972.  NO. OF FISHERMEN 36.                            GROSS REVENUE    GROSS COSTS    NET REVENUES
QUOTA SIZE  WHITEFISH   360000.  WALLEYE     40000.     PER FISHERMAN        1821.11        1139.96          681.14
                                                        PER POUND               0.18           0.11            0.07
FISHING METHOD                                          TOTAL               65559.89       41038.72        24521.17
LAKESIDE CULLAGE


LENGTH OF SUMMER SEASON 4.5 MONTHS
TOTAL CATCH   760296.  NO. OF FISHERMEN 78.                            GROSS REVENUE    GROSS COSTS    NET REVENUES
QUOTA SIZE  WHITEFISH   720000.  WALLEYE     80000.     PER FISHERMAN        1738.69         586.98         1151.71
                                                        PER POUND               0.18           0.06            0.12
FISHING METHOD                                          TOTAL              135617.73       45784.71        89833.01
LAKESIDE CULLAGE
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TABLE 2 LEAF RAPIDS PLANT COSTS AND REVENUES
ASSUMPTION: CULLAGE RATES REDUCED BY 50 PER CENT

I. VARIABLE COSTS	(1) CO-OP PAYMENTS TO FISHERMEN	+	(2) VOLUME INCREMENT COSTS	+	(3) TRANSPORTATION TO LEAF RAPIDS	+	(4) TRANSPORTATION TO TRANSCONA	=	(5) TOTAL VARIABLE COSTS
WINTER SEASON									
TOTAL COSTS	65559.387		21725.441		7199.436		22930.205		117414.970
PER LB. THE PLANT SELLS*	0.187		0.062		0.021		0.065		0.335
PER LB. THE PLANT BUYS	0.182		0.060		0.015		0.065		0.326
SUMMER SEASON									
TOTAL COSTS	135617.726		47839.508		11404.433		46206.962		241068.629
PER LB. THE PLANT SELLS*	0.194		0.068		0.016		0.066		0.344
PER LB. THE PLANT BUYS	0.178		0.053		0.015		0.065		0.317
ANNUAL									
TOTAL COSTS	201177.613		69564.949		18603.870		69137.167		358483.599
PER LB. THE PLANT SELLS*	0.191		0.066		0.018		0.066		0.341
PER LB. THE PLANT BUYS	0.180		0.062		0.015		0.065		0.320

II. FIXED COSTS	(6) MINIMUM OPERATION COSTS	+	(7) CAPITAL COSTS	=	(8) TOTAL FIXED COSTS
WINTER SEASON					
TOTAL COSTS	39616.387		19306.871		58923.258
PER LB. THE PLANT SELLS	0.113		0.055		0.168
PER LB. THE PLANT BUYS	0.110		0.054		0.164
SUMMER SEASON					
TOTAL COSTS	51163.602		28899.949		80063.551
PER LB. THE PLANT SELLS	0.073		0.041		0.114
PER LB. THE PLANT BUYS	0.067		0.038		0.105
ANNUAL					
TOTAL COSTS	90779.988		48206.820		138986.809
PER LB. THE PLANT SELLS	0.086		0.046		0.132
PER LB. THE PLANT BUYS	0.081		0.043		0.124

III. NET PROFIT	(9) REVENUES PAID TO CO-OP	-	(10)=(5)+(8) TOTAL COSTS	=	(11)=(9)-(10) CO-OP PROFIT OR LOSS
WINTER SEASON					
TOTAL COSTS	135884.178		176338.227		-40454.049
PER LB. THE PLANT SELLS	0.387		0.502		-0.115
PER LB. THE PLANT BUYS	0.377		0.490		-0.112
SUMMER SEASON					
TOTAL COSTS	26494[illegible].170		321132.180		-56189.011
PER LB. THE PLANT SELLS	0.378		0.459		-0.080
PER LB. THE PLANT BUYS	0.348		0.422		-0.074
ANNUAL					
TOTAL COSTS	400827.343		497470.408		-96643.060
PER LB. THE PLANT SELLS	0.381		0.473		-0.092
PER LB. THE PLANT BUYS	0.358		0.444		-0.086

WINTER TRANSPORTATION METHOD: TO PLANT BOMBARDIER TO CORP. TRUCK RAIL
SUMMER TRANSPORTATION METHOD: TO PLANT FREIGHT BOAT TO CORP. TRUCK RAIL
OPERATIONS
VOLUME (LB.) 1120267. EMPLOYEES 19.0 EMPLOYEE INCOME 97600.
WINTER QUANTITY CULLED (LB.) LAKESIDE 77133. PLANT 7199. CORPORATION 1764.
SUMMER QUANTITY CULLED (LB.) LAKESIDE 162912. PLANT 49419. CORPORATION 10663.
* ACTUAL COST PER POUND SOLD PLUS COST OF CULLED FISH PER POUND SOLD

TABLE 5

SOUTH INDIAN LAKE CO-OP FISHERIES LTD. REVENUE AND COST STATEMENT

	PLANT		LAKE OPERATIONS		TOTALS
	DEBIT	CREDIT	DEBIT	CREDIT	
REVENUES					
AGENCY FEES		89621.31			89621.31
BOX ALLOWANCE		22405.34			22405.34
ICE DEDUCTION				11202.67	11202.67
CAMP DEDUCTION				11202.67	11202.67
TOTAL GROSS REVENUES		112026.60		22405.34	134431.80
OPERATING EXPENSES					
WAGES + SALARIES	68000.00		13600.00		81600.00
FRINGE BENEFITS	6800.00		1360.00		12320.00
BOXES	21764.95				21764.95
HYDRO COSTS	5000.00				5000.00
ICE EXPENSES			26400.00		26400.00
OFFICE OVERHEAD	45020.00				45020.00
CAPITAL ACCOUNT					
INTEREST	3017.35		553.52		3570.88
DEPRECIATION	37716.92		6919.03		44635.95
NET PROFIT OR LOSS	165554.00	112026.60	48832.55	22405.34	-79954.63**

** DIFFERENCE OF THIS PROFIT LOSS FIGURE AND PREVIOUS ONE DUE TO ROUNDING AND CULLAGE

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                                    TABLE 1 SOUTH INDIAN LAKE FISHERMEN
                                   ASSUMPTION: ROUGH FISH INCLUDED IN CATCH

LENGTH OF WINTER SEASON 3.5 MONTHS                                       GROSS REVENUE    GROSS COSTS    NET REVENUES
TOTAL CATCH    514220.  NO. OF FISHERMEN 36.            PER FISHERMAN         1949.57        1139.96          809.61
QUOTA SIZE  WHITEFISH   360000.  WALLEYE     40000.     PER POUND                0.14           0.08            0.06
                                                        TOTAL                70184.60       41038.72        29145.89
FISHING METHOD
LAKESIDE CULLAGE

LENGTH OF SUMMER SEASON 4.5 MONTHS                                       GROSS REVENUE    GROSS COSTS    NET REVENUES
TOTAL CATCH  1086083.  NO. OF FISHERMEN 78.             PER FISHERMAN         1863.92         586.98         1276.94
QUOTA SIZE  WHITEFISH   720000.  WALLEYE     80000.     PER POUND                0.13           0.04            0.09
                                                        TOTAL               145385.77       45784.71        99601.05
FISHING METHOD
LAKESIDE CULLAGE
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TABLE 2 LEAF RAPIDS PLANT COSTS AND REVENUES
ASSUMPTION: ROUGH FISH INCLUDED IN CATCH

I. VARIABLE COSTS	(1) CO-OP PAYMENTS TO FISHERMEN	+	(2) VOLUME INCREMENT COSTS	+	(3) TRANSPORTATION TO LEAF RAPIDS	+	(4) TRANSPORTATION TO TRANSCONA	=	(5) TOTAL VARIABLE COSTS
WINTER SEASON									
TOTAL COSTS	70184.603		30703.008		10284.402		32087.333		143259.345
PER LB. THE PLANT SELLS*	0.144		0.063		0.021		0.066		0.293
PER LB. THE PLANT BUYS	0.136		0.060		0.015		0.065		0.279
SUMMER SEASON									
TOTAL COSTS	145385.766		56479.820		16291.243		61417.985		279574.814
PER LB. THE PLANT SELLS*	0.159		0.062		0.018		0.067		0.305
PER LB. THE PLANT BUYS	0.134		0.052		0.015		0.065		0.257
ANNUAL									
TOTAL COSTS	215570.369		87182.828		26575.644		93505.318		422834.159
PER LB. THE PLANT SELLS*	0.153		0.062		0.019		0.067		0.301
PER LB. THE PLANT BUYS	0.135		0.054		0.015		0.065		0.264

II. FIXED COSTS	(6) MINIMUM OPERATION COSTS	+	(7) CAPITAL COSTS	=	(8) TOTAL FIXED COSTS
WINTER SEASON					
TOTAL COSTS	39616.387		19306.871		58923.258
PER LB. THE PLANT SELLS	0.081		0.040		0.121
PER LB. THE PLANT BUYS	0.077		0.038		0.115
SUMMER SEASON					
TOTAL COSTS	51163.602		28899.949		80063.551
PER LB. THE PLANT SELLS	0.056		0.032		0.087
PER LB. THE PLANT BUYS	0.047		0.027		0.074
ANNUAL					
TOTAL COSTS	90779.988		48206.820		138586.809
PER LB. THE PLANT SELLS	0.065		0.034		0.099
PER LB. THE PLANT BUYS	0.057		0.030		0.087

III. NET PROFIT	(9) REVENUES PAID TO CO-OP	-	(10)=(5)+(8) TOTAL COSTS	=	(11)=(9)-(10) CO-OP PROFIT OR LOSS
WINTER SEASON					
TOTAL COSTS	144164.743		202182.603		-58017.861
PER LB. THE PLANT SELLS	0.295		0.414		-0.119
PER LB. THE PLANT BUYS	0.280		0.393		-0.113
SUMMER SEASON					
TOTAL COSTS	264755.567		359638.365		-94882.797
PER LB. THE PLANT SELLS	0.289		0.392		-0.104
PER LB. THE PLANT BUYS	0.244		0.331		-0.087
ANNUAL					
TOTAL COSTS	408920.310		561820.968		-152900.658
PER LB. THE PLANT SELLS	0.291		0.400		-0.109
PER LB. THE PLANT BUYS	0.256		0.351		-0.096

WINTER TRANSPORTATION METHOD: TO PLANT BOMBARDIER TO CORP. TRUCK RAIL
SUMMER TRANSPORTATION METHOD: TO PLANT FREIGHT BOAT TO CORP. TRUCK RAIL

OPERATIONS
VOLUME (LB.) 1600303. EMPLOYEES 22.0 EMPLOYEE INCOME 106800.
WINTER QUANTITY CULLED (LB.) LAKESIDE 220380. PLANT 20569. CORPORATION 4937.
SUMMER QUANTITY CULLED (LB.) LAKESIDE 465464. PLANT 141191. CORPORATION 28347.

* ACTUAL COST PER POUND SOLD PLUS COST OF CULLED FISH PER POUND SOLD

TABLE 5

SOUTH INDIAN LAKE CO-OP FISHERIES LTD. REVENUE AND COST STATEMENT

	PLANT		LAKE OPERATIONS		TOTALS
	DEBIT	CREDIT	DEBIT	CREDIT	
REVENUES					
AGENCY FEES		96818.25			96818.25
BOX ALLOWANCE		27205.14			27205.14
ICE DEDUCTION				16003.03	16003.03
CAMP DEDUCTION				16003.03	16003.03
TOTAL GROSS REVENUES		124023.30		32006.06	156029.30
OPERATING EXPENSES					
WAGES + SALARIES	74400.00		16400.00		90800.00
FRINGE BENEFITS	7440.00		1640.00		13240.00
BOXES	29262.83				29262.83
HYDRO COSTS	5000.00				5000.00
ICE EXPENSES			26400.00		26400.00
OFFICE OVERHEAD	45020.00				45020.00
CAPITAL ACCOUNT					
INTEREST	3017.35		553.52		3570.88
DEPRECIATION	37716.92		6919.03		44635.95
NET PROFIT OR LOSS	172594.00	124023.30	51912.55	32006.06	-68477.13**

** DIFFERENCE OF THIS PROFIT LOSS FIGURE AND PREVIOUS ONE DUE TO ROUNDING AND CULLAGE

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TRANSPORTATION OF FISH IN NORTHERN MANITOBA

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APPENDIX D: TRANSPORTATION OF FISH IN NORTHERN MANITOBA

MODES OF TRANSPORT

Basically, there are four modes of transport: (1) air, (2) freight boat, (3) truck, and (4) rail.

Air

V. Hryshko of the Department of Co-op Development, indicated that the chartered rates for flying fish in this area are 85¢/mile. The aircraft used has a 1,600 lb. capacity.[1]

Therefore, to obtain the cost per pound, it would be necessary to know the distance in air miles from the packing stations on South Indian Lake to the remote lakes that are being fished. It would also be necessary to know the percent capacity at which the plane flies.

Time of transport would not be a critical factor, since these planes fly at a rate of 100 miles per hour. The only concern would be that there were no pick-up delays due to either poor communication or weather factors.

Freight Boat

Once the fish have been collected at the packing stations on South Indian Lake, freight boats pick them up and deliver them to the plant at Leaf Rapids.

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[1] Personal interview with Mr. V. Hryshko, Supervisor of Co-operatives, Department of Co-operative Development, January, 1974.

Mr. Hryshko[2] estimated the cost of such transportation at 1.5¢/lb. for any point on South Indian Lake. Each boat has a capacity of 30,000 lbs. and they travel with 50-60 percent of a full load. The boats travel at a speed of 10 knots/hour and a complete return trip from the plant to the north end of the lake takes approximately 24 hours.

In addition to hauling fish, the boats also haul supplies for the fishermen and engage in shipping some material for the Hudson's Bay Company.

The seasonal costs of operating the boats are independent of fish hauled. The captain and the helper are each on a salary basis. The captain is paid $900/month and the helper $700/month. Each are employed for 5 months.

Mr. Kabaluk estimated cost of the 2 boats at $60,000.[3] Other costs are fuel, insurance, maintenance and depreciation.

Truck

From Leaf Rapids, one mode of transport is by truck to Lynn Lake and then by train to Winnipeg.

Hryshko[4] estimated the trucking cost involved at 2¢/lb. The trip takes 1½-2 hours. A Winnipegosis trucking firm hauled the fish in 1972-73.

Rail

From Lynn Lake, fish is moved by CNR to Winnipeg. Hryshko[5] estimated rail cost at 5¢/lb. The trip takes 5 days. He also indicated that each load contains between 30,000-35,000 pounds of fish.

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[2] Ibid.

[3] Taken from the financial statements of the South Indian Lake Co-operative.

[4] Op. cit.

[5] Ibid.

The trains do not run daily, and because of the long time period, the fish must be loaded as soon as the train arrives rather than wait and combine fish to obtain a full carload. There are also problems of congestion of cars at Lynn Lake and derailments.

There is some possibility of combining fish shipments from northern Manitoba lakes at The Pas.

Rail shipment rates are as follows:[6]

1. Less than carload lot rates from Lynn Lake to Winnipeg are as follows:

    $7.00 up to 25 lbs.

    $27.30 for 500 lbs.

    $5.09/100 lb. up to 1,000 lbs.

    $4.88/100 lb. up to 2,000 lbs.

2. Carload lot rates from Lynn Lake to Winnipeg are as follows:

    Minimum of 20,000 lbs. $2.63/100 lbs.

    Minimum of 24,000 lbs. $2.57/100 lbs.

    Minimum of 30,000 lbs. $2.50/100 lbs.

    Minimum of 40,000 lbs. $2.45/100 lbs.

3. Unpublished carload lot rates from The Pas to Winnipeg are as follows:

    Minimum of 30,000 lbs. $1.65/100 lbs.

    Minimum of 40,000 lbs. $1.52/100 lbs.

    Minimum of 60,000 lbs. $1.39/100 lbs.

4. Unpublished carload lot rates from Lynn Lake to The Pas are as follows:

    $2.63/100 lbs. 500 lbs.

    $2.38/100 lbs. 1,000 lbs.

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[6] Telephone conversation with personnel in the Freight Department, Canadian National Railways, Winnipeg.

In the case of shipment from The Pas to Winnipeg, the CNR does not assume responsibility for storage at The Pas.

Truck Direct to Winnipeg

The other alternative route from Leaf Rapids is directly to Winnipeg by the newly constructed road. Gardewine Transport has a bid in to do this hauling.

A conversation with Mr. G. Friesen, General Manager of Gardewine Transport, provided the following detailed breakdown of costs involved in his trucking operation.[7]

Weight. The maximum gross weight of vehicle permitted by law is 74,000 lbs. minus the weight of the cab leaves a gross transport weight of 42,000-44,000 lbs.

Life span. The life span of the cab is approximately one million miles or seven-eight years. The oldest truck Gardewine has on the highway is a 1968 model that they plan to use for one more year. Once the cabs are too old and worn for highway use, they are retired to the city runs. The city runs involve picking up cargo from the customer and delivering it to the terminal for preparation for the highway runs. These city cabs never leave town. Once they are too worn out even for city runs, the remaining good parts of the cab are salvaged to be used as spare parts.

Purchase costs. Their last order of tractors or cabs was purchased at a price of $28,000 each. The trailers were purchased for $8,800. Gardewine insulates their trailers themselves at a cost of $1,500. This doesn't include refrigeration units, which cost $7,000 each. However, if the fish are packed in ice a refrigeration unit is not required. It is a distance of 620 miles from Leaf Rapids to Winnipeg. If the truck leaves at 4 P.M. it will arrive the next day at 12 noon. Insulation that is now used by Gardewine is 2" of styrofoam instead of the previous 6-7" of fiberglass.

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[7] Personal interview with Mr. G. Friesen, General Manager, Guardvine & Sons Ltd., January-February, 1974.

Operating costs. To go from A to B involves a cost of 44.11¢/mile. This does not include end costs, loading costs or costs of supervision. The breakdown is as follows:

Wages and fringe benefits	10¢/mile
Tires and tubes for trailer and cab	3¢/mile
Repairs, maintenance and depreciation	10¢/mile
Licenses and insurance	2.5¢/mile
Trailer depreciation and repairs	6¢/mile
Cargo insurance	1¢/mile
Fuel	10¢/mile
Miscellaneous (heaters, washing, driver's road expenses, etc.)	3¢/mile

The end costs include such things as advertising, telephone, office salaries and interest charges. There are also terminal costs depending on the item to be picked up. For example, the supplies for the fishermen (eg., nets) have a different terminal cost than picking up fish.

Leasing. The company has the option of hiring drivers or leasing a cab and driver. In other words, the driver owns his own cab. In this case, the company pays lease drivers 30¢/mile from which they pay fuel, wages, repairs, depreciation and tires. The same items cost the company between 29 and 30¢/mile.

The advantage to the driver is that he'll drive his cab more carefully and hence reduce repair costs. Furthermore, he often can do much of his own maintenance work and realize a further saving.

The company does not have the same element of control over lease drivers as they do their own. If a lease driver books off sick, the company can't put another driver in his cab. One of the advantages to lease drivers is that it offers the company some flexibility. For example, when there is a rail strike, the trucking companies have increased volume. The company can then try and hire extra lease drivers. To order extra cabs takes a long time. It can be as long as nine or ten months before orders are filled.

Miscellaneous considerations. As was noted earlier, each trailer can carry 42,000-44,000 pounds of cargo. For fish, it means the trailer can carry up to 400 boxes in one load. Each box contains 60 pounds of fish and 40-60 pounds of ice.

Since Gardewine also operates in Saskatchewan, the company falls under federal minimum wages laws of $1.90/hr. Their drivers earn more than this. It is necessary to pay them good wages to ensure a supply of drivers. This is expecially true in northern areas where the men can often make high wages working in the bush.

The normal life span of a trailer is 8-10 years. After that period it becomes obsolete due to differences in weight, length and height requirements set by law.

The loading and unloading time for a trailer of 42,000-44,000 pounds is approximately three hours. Fish might require a little more time.

Rates. The rates are controlled by the Highway Traffic and Motor Transport Board. To engage in rate-cutting is illegal.

Trucking Rates Winnipeg to Leaf Rapids

Volume (lbs.)	Total Cost
1-50	$5.35
51-100	$6.05
101-150	$7.90
151-200	$9.70
201-250	$11.30
251-300	$12.85
301-350	$14.30
351-400	$15.75
401-450	$17.15
451-500	$18.55

	Cost per cwt.
500	$3.71
1,000	$3.41
2,000	$3.19
5,000	$2.98
10,000	$2.52
20,000	$2.11
30,000	$1.58
40,000	$1.37

Winter roads. As was noted earlier, it is possible to construct winter roads. In the South Indian Lake community, the winter road was completed on March 25 and the last truck in was April 8, 1973.[8]

According to Manitoba to 1980,[9] winter truck roads can be constructed and maintained at a fraction of the cost of the annual interest on the capital necessary to construct an all-weather road.

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[8] J.D. Collinson et al., "Social and Economic Impact of the Nelson River Hydro Development," Preliminary Report (Winnipeg: Department of Northern Affairs, June, 1973), p. 105. In 1974 the road was open for heavy freight traffic toward the end of January and open for light traffic one month earlier.

[9] Manitoba Commission on Targets for Economic Development, Manitoba to 1980 (Winnipeg: The Commission, 1969), p. 275.

Gardewine and Sons Ltd. recently completed a study on winter roads[10] dealing with such communities as Norway House, Island Lake, Cross Lake, Split Lake, Oxford House, etc. The conclusion that they reached was that if optimum conditions had prevailed in the winter of 1973, i.e., if winter roads were completed on schedule, the overall costs in 1973 compared to overall costs in 1972 would have resulted in a savings of $506,300.

Obviously, consideration must be given to the question of winter roads in the South Indian Lake area. It is possible that winter roads could create a savings in winter transportation costs to the Co-operative.

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[10] Gardewine and Sons Ltd. "Quick Transportation to Remote Communities in Northern Manitoba via Winter Truck Roads, Winter 1972-1973," (Winnipeg, September, 1973).

APPENDIX E

SOUTH INDIAN LAKE LABOR BALANCE

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APPENDIX E: SOUTH INDIAN LAKE LABOR BALANCE

Accurate population data for isolated northern communities such as South Indian Lake are exceedingly difficult to obtain due to the very high degree of mobility in and out of the community including fishing, trapping, hunting and job seeking. An estimate of 210 was obtained from Hospital Commission records[1] and an estimate of 425 was obtained from the Canada Department of Indian Affairs and Northern Development.[2] The smaller estimate likely excludes Treaty Indians and the larger figure non-Treaty residents. The total population is estimated to be 590 which is less than the sum of the two separate estimates.[3]

The future population of a community or region is a function of its: (1) present population, (2) fertility rate, (3) survival rate, and (4) net migration. The results of a population projection are a function of the assumptions on which the projection is based. Assuming high fertility rates, low death rates and rapid immigration, the population projection will show a high population for the projected year.

The assumptions made in this analysis are as follows:

1. Migration is assumed to be equal to zero.

2. 1970 Manitoba fertility levels, which change at the same rate as the medium fertility rate changes projected for Canada by the Economic Council of Canada, will prevail.

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[1] D.J. Sandell, and C.F. Framingham, Manitoba North (Winnipeg: Secretariat Planning and Priorities Committee of Cabinet, 1970).

[2] J.D. Collinson et al., Social and Economic Impact of the Nelson River Hydro Development, Preliminary Report (Winnipeg: Manitoba Department of Northern Affairs, 1973), p. 193.

[3] Ibid., p. 194.

3. Mortality rates will be stable at the levels specified for Manitoba in the most recent life tables published by Statistics Canada.[4]

It is likely that migration will occur, South Indian Lake fertility is higher than the medium rate for Canada and mortality in South Indian Lake will be higher than the Manitoba average. Additional information is required to refine the estimates. The procedures and data used to project South Indian Lake population (Table E1) are outlined in detail elsewhere.[5]

JOBS AVAILABLE

Few jobs are expected to be available to women in the area. The population by age of the women has been projected for 1975, 1980 and 1990, indicate the magnitude of the potential female work force. Two possibly large sources of employment for the males in South Indian Lake area (other than traditional activities like fishing and trapping) are Manitoba Hydro development and mining. Information on present employment status for the entire Community is not available. Available information (Table E2) indicates a very low labor force participation rate.

A joint Northern Affairs and Sherritt-Gordon program has been initiated to employ northerners but it is not known how many South

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[4] W.R. Maki, C.F. Framingham, and D.J. Sandell, Population Projections for Manitoba by Region and Town Size—Some Alternatives, 1971-1990 (Winnipeg: Department of Agricultural Economics, University of Manitoba, 1973), p. 36.

[5] "Projected Population of Northern Manitoba Communities," in "Social and Economic Impact...," op. cit., pp. 131-132 and 139.

Table E1

South Indian Lake

Population Projections Based on Average for Northern Native People

	Age	1971			1975			1980			1990		
	Group	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Pre School	0–5	59	57	116	53	53	106	68	65	133	107	103	210
School	5–15	95	92	187	111	108	219	114	109	223	152	148	300
School or Undecided	15–20	30	31	61	39	38	77	50	50	100	54	52	106
Potential Mobile Labor Force	20–40	70	64	134	81	81	162	108	103	211	173	154	347
Potential Traditional Labor Force & Life Style	40–65	39	31	70	43	35	78	49	40	89	71	65	136
Pensioners with less Flexible Life Style	65+	13	9	22	13	12	25	15	14	29	17	18	35
Total		306	284	590	343	324	669	404	381	785	574	560	1,134

Source: Collinson et al., "Social and Economic Impact..." op. cit., p. 148.

Table E2

Weeks Worked by the South Indian Lake Labor Force (Based on a Sample of 91 from Indian and Northern Development Human Resources Survey, 1973)

Weeks Worked	Number	Percent
0-10	21	16
11-20	24	19
21-30	22	17
31-40	32	25
41-50	8	6
Full time	22	17
	129	100

Total Weeks Employment = 3,639

Indian Lake residents were employed at the mine in 1972 or are likely to be employed in the future. Most of the work with Manitoba Hydro available for native people involves bush clearing, channel digging and some construction work. Some native people are currently working for Manitoba Hydro. According to Mills,[6] manager of the Public Relations Department of Manitoba Hydro, two more winters will be required to complete the work.

After the construction work is completed, a small staff of men will be needed for maintenance. However, due to the skilled nature of the job, it is unlikely that many of these maintenance jobs will be filled by native people.

Mills supplied figures as to the number of resident employees actively working as of December 7, 1973. A resident is a person (white, native, or Metis) who lives north of the 53 parallel.

South Bay (channel digging)	70
Missi Falls	8
Notigi control structure	33
Forebay Area	38

Mills indicated that due to the lateness in completion of winter roads, they were not in full operation at December 7, 1973. Therefore, he feels the total number of jobs will increase as more equipment is brought in.

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[6] Private conversation with Mr. E.T. Mills, January-February, 1974.

In a further conversation with Mills, he quoted employment figures for the month of December from the January 17 edition of the Manitoba Hydro company newspaper.

	Local Residents	Total Employment
Kettle and Long Spruce	146	1,300
Churchill River Diversion Work	149	567
Lake Winnipeg Regulation	364	1,190
Total Northern Labor	600	~3,050

The above figures indicate that approximately 20 percent of the total Manitoba Hydro northern labor force is comprised of local residents.

However, Mills feels that as the work progresses and more technical skills become necessary, the percentage of local labor will decrease. He feels that this is because most northern residents (and indeed to a lesser extent most Canadian residents) do not possess the skills necessary to operate the equipment.

Mr. E. Mills made the comment about the necessity to hire labor outside of Canada. For example, one of the contractors is advertising for labor in Dublin, Ireland.

The following is an estimate of work force population supplied by Manitoba Hydro in 1972.[7]

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[7] Collinson et al., op. cit., p. 93.

Table E3

Work Force Population

		Notigi	South Bay	Missi Falls	Clearing	Total
1973	January-April	20	20	60	200	300
	May-August	60	60	100	50	270
	September-December	80	140	100	200	520
1974	January-April	150	200	200	200	750
	May-August	250	200	350		800
	September-December	200	200	750	100	750
1975	January-April	150	200	100	200	700
	May-August	100	100	100		300
	September-December	80	50	80		210

APPENDIX 8 - VOL. 3 - E

REPORT ON INDIAN AFFAIRS BRANCH
HUMAN RESOURCE SURVEY

REPORT ON INDIAN AFFAIRS BRANCH
HUMAN RESOURCE SURVEY

by

ACRES CONSULTING SERVICES LTD.
Winnipeg, Manitoba
November, 1972

for

THE LAKE WINNIPEG, CHURCHILL AND NELSON RIVERS STUDY BOARD

SPECIAL NOTE

THE CONCLUSIONS AND RECOMMENDATIONS CONTAINED IN THIS APPENDIX ARE THOSE OF THE AUTHOR(S) AND ARE NOT NECESSARILY THE SAME AS THE CONCLUSIONS AND RECOMMENDATIONS OF THE LAKE WINNIPEG, CHURCHILL AND NELSON RIVERS STUDY BOARD AS EXPRESSED IN THE SUMMARY REPORT AND THE TECHNICAL REPORT.

1) INTRODUCTION

Under the terms of agreement of September 28, 1972, between the Study Board and Acres Consulting Services Ltd., the consultant has held discussions with officials of the Department of Indian Affairs and Northern Development concerning their current survey of registered Indians in the Province of Manitoba. This document reports on the progress of discussions to date and on the feasibility of extending the survey to any or all people living in the five study areas who would otherwise be excluded from the Indian Affairs Branch survey. In addition, this report also outlines the type of information the Study Board would receive from the Indian Affairs Branch (Appendix A), and the likely dates on which this information would become available.

2) SURVEY COVERAGE

The Indian Affairs Branch survey is designed to gather certain socio-economic information on all registered Indians in the Province of Manitoba, plus information on those Metis and other people who happen to reside within the boundaries of designated Indian reservations. As presently constituted, the Human Resources Survey will not, therefore, generate any statistical data on such Metis communities as Ilford and Warren Landing, or on such major population centers as Thompson and Snow Lake -- except to the extent that registered Indians reside within these communities.

The first phase of data collection for the survey has already been completed (during the summer of 1972), with varying degrees of success in northern areas. A second data collection phase is planned during December, 1972/January, 1973, during which time it is anticipated that many migrant registered Indians (who would otherwise not be reported) will return to their respective communities.

Based upon discussions with Indian Affairs Branch officials, Acres Consulting Services Ltd has estimated that approximately 25,170 people in the five study areas will not be covered by the Human Resources Survey. Of these 25,170 people, 2,570 will be located in native communities, eg. Thicket Portage, Wabowden, while an additional 22,600 people will be located in the three major population centers of Thompson, Leaf Rapids and Churchill. It is not recommended that these latter 3 communities be surveyed at this time, given the expense and planning efforts associated with such a task. Estimates of survey coverage on a community specific basis are provided in Table 1 attached.

3) EXTENSION OF SURVEY

Discussions with officials of the Indian Affairs Branch concerning extension of the survey have focused on two distinct levels:

(a) seconding of personnel familiar with the survey from the Indian Affairs Branch, to arrange for

TABLE 1

Estimates of Indian Affairs Branch Human Resources Survey Coverage by Community

Community	Population Covered by Survey	Population Not Covered by Survey
South Indian Lake	470	120
Granville Lake	90	10
Nelson House	1,200	80
Cross Lake	1,840	90
Warren Landing	-	30
Norway House/Rossville	2,300	500
Wabowden	-	900
Thicket Portage	-	400
Pikwitonei	-	280
Ilford	-	150
Split Lake	620	10
York Landing	70	-
Sub-Total Native Communities	6,590	2,570
% "	72%	28%
Thompson	N/A	20,000
Leaf Rapids	N/A	600
Churchill	N/A	2,000
Total	N/A	25,170

the completion of interviews in the Metis communities (as well as the coding of information).

(b) utilization of existing computer programmes and facilities for processing of additional data, in conjunction with original data obtained by the Indian Affairs Branch.

A tentative agreement has been established with reference to the seconding of personnel (training of new staff would, of course, entail a considerable expenditure of funds). The present co-ordinator of the entire Human Resources Survey in Manitoba (Mr. Felix Boubard) is a term employee with the Department and is scheduled to complete his assignment with the Department at the end of January, 1973. Arrangements could easily be made to retain Mr. Boubard's services after that time on behalf of the Study Board, until completion of the survey of Metis communities (estimated at 6 to 8 weeks). Given that Mr. Boubard would ultimately be responsible for the coding of information as well, the Department of Indian Affairs and Northern Development would not become directly involved in the data collection phase.

In a practical sense, there are questions that need to be raised with reference to the Outlet Lakes study area, where report completion is targeted for the end of March, 1973. Although no formal commitment has been given, Mr. John Zyzneiwski of the Indian Affairs Branch has indicated that there would be little difficulty in ensuring that Mr. Boubard visits the communities of Norway House and Cross Lake at the beginning of the second phase of data collection. At this time, moreover, Mr. Boubard would be provided with the opportunity to arrange for the interviewing of the 620 people estimated not to be covered in the original survey. All other communities would, however, only be surveyed after Mr. Boubard had completed his assignment with the Department.

Although Mr. Boubard would become directly involved in interviewing respondents on occasion, his primary function would be to initiate the survey and to co-ordinate the efforts of the interviewers (including subsequent coding corrections). On the basis of the experience of the Indian Affairs Branch, interviewers would probably require a payment of approximately one dollar per survey. Mr. Zyzneiwski anticipates no problem in basing payment on a piece rate basis. The technique of selection of interviewers, however, remains unresolved and clearly must be the subject of further idscussions involving the Study Board.

On the basis of the cost parameters outlined above, the costs of data collection for all of the additional 2,570 persons (assuming a 70 per cent response rate) have been tentatively estimated as follows:

Survey Co-Ordinator (2 months)	$1,500
Travel, lodging (preliminary estimate)	1,200
Interviews	1,800
Total	$4,500

Estimates of travel cost will vary, depending on the extent to which arrangements for interviewers can be made prior to Mr. Boubard's arrival in any community.

With reference to computer applications, some detailed correspondence has been forwarded to the Department of Indian Affairs and Northern Development in Ottawa (see Appendix B) on problems that would likely be encountered in utilizing and integrating the data collected on Metis communities. A long distance telephone conversation held on November 1, 1972, with Mrs. B. Cunningham of the Education Directorate has indicated that few (if any) technical problems are likely to be associated with this task, eg. postal coding. The Department has, moreover, indicated its willingness not to charge the Study Board for the use of computer facilities and programmes associated with this survey.

With respect to the Outlet Lakes area, however, some additional expense may be encountered if demands on computer time in Ottawa delay special runs on the communities of Norway House/ Rossville, Cross Lake and Warren Landing. At the extreme, though, nothing more may be involved than keypunching of approximately 3,000-3,500 surveys in Winnipeg or Ottawa, at the expense of the Study Board.

Aside from the special runs, a target completion date of May/June 1973 is suggested for computer print-outs of socio-economical information on a community specific basis.

4. INFORMATION OUTLINE

The reader is directed to Appendix A of this report, where an explanation of the output of the Human Resources Survey is provided. In particular, 73 tables will be produced for each community, detailing information on age, sex, language, education, training, labour force participation, extent and duration of employment, and income (by family and by community). Certain information is cross-classified by ethnic status -- Indian, Metis and other.

No major problems are anticipated with this computer programme, given that it has been used previously (xerox examples of print-outs from the Northwest Territories survey are included in Appendix A).

5. RECOMMENDATIONS

During the last month, the technical feasibility of extending the coverage of the Human Resources Survey has been established. In the event that the Study Board wishes to proceed with this survey, Acres Consulting Services Ltd. recommends the following courses of action:

(1) negotiate with Mr. Boubard to undertake and complete the survey of the additional population not covered in the original survey;

(2) arrange with the Indian Affairs Branch that Mr. Boubard will indeed co-ordinate in early December the survey of both the original and additional population in Norway House/Rossville, Cross Lake and Warren Landing.

(3) ensure that postal codes and "dummy" band numbers are in fact assigned to the additional population, for the purposes of computer sorting routines;

(4) arrange through such agencies as the Northern Manpower Corps, Vocational Rehabilitation Services, the Manitoba Indian Brotherhood and/or the Manitoba Metis Federation for interviewers in the designated Metis communities;

(5) examine the possibility of establishing a bank account for the survey co-ordinator, to permit immediate payment for surveys completed (this form of remuneration encourages rapid, accurate work);

(6) confirm with officials in Ottawa a target date for special computer runs in the Outlet Lakes area (preferably in early January);

(7) determine with officials in Ottawa a target date for subsequent computer runs, by study area if necessary;

(8) confirm with the Department of Indian Affairs and Northern Development that no charges will in fact be assessed for computer application (conversely, any information on registered Indians provided by the Study Board should be provided gratis to the Department).

While this report has focused on a survey encompassing all native communities in the five study areas, no specific recommendations are presented on the issue of whether or not all these communities should be surveyed. This task is the responsibility of the Study Board Core Group, in the context of decisions made with reference to the social impact matrix. It is noted that if the survey is restricted to the additional populations in Warren Landing, Norway House/Rossville, Cross Lake, Nelson House and South Indian Lake, the following (tentatively estimated) costs are likely to be incurred:

Survey Co-Ordinator (1 Month)	$750
Travel, lodging (preliminary estimate)	500
Interviewers (70 per cent response)	575
Total	$1,825

Information on registered Indians in these or any other communities will, however, still be provided by the Department of Indian Affairs and Northern Development to the Study Board.

APPENDIX 8 - VOL. 3 - F
REPORT ON SOCIO-ECONOMIC DATA SOURCES FOR SELECTED NORTHERN MANITOBA COMMUNITIES

REPORT ON SOCIO-ECONOMIC DATA SOURCES FOR SELECTED NORTHERN MANITOBA COMMUNITIES

by

ACRES CONSULTING SERVICES LTD.
Winnipeg, Manitoba
November, 1972

for

THE LAKE WINNIPEG, CHURCHILL AND NELSON RIVERS STUDY BOARD

SPECIAL NOTE

THE CONCLUSIONS AND RECOMMENDATIONS CONTAINED IN THIS APPENDIX ARE THOSE OF THE AUTHOR(S) AND ARE NOT NECESSARILY THE SAME AS THE CONCLUSIONS AND RECOMMENDATIONS OF THE LAKE WINNIPEG, CHURCHILL AND NELSON RIVERS STUDY BOARD AS EXPRESSED IN THE SUMMARY REPORT AND THE TECHNICAL REPORT.

1. INTRODUCTION

As outlined in Mr. C.F. Osler's letter of September 28th, 1972, to Dr. I.W. Dickson, Study Director, Acres Consulting Services Ltd. has examined available data on the following five communities in northern Manitoba:

(1) Norway House/Rossville
(2) Cross Lake
(3) Nelson House
(4) South Indian Lake
(5) Warren Landing

To a large extent, this information was provided upon request from various Federal and Manitoba Departments and Agencies, on both a current and (where available) historical basis. A list of co-operating Departments and Agencies constitutes Table 1 of this report. In addition, recourse was also made to special reports, such as those prepared by Jean H. Lagasse for the Manitoba Department of Agriculture and Immigration, by the Center for Settlement Studies for Manitoba Newstart Incorporated, and by Van Ginkel/Hedlin, Menzies for the Manitoba Development Authority.

The process of accumulating and classifying data has resulted in the preparation of separate summary matrices for these five selected communities, as well as 104 supporting tables. Each matrix lists current data and 10 year data (as well as commentary on data gaps and discrepancies) for the following items:

(1) Population
    - totals
    - age-sex distribution
    - cultural and language distribution
    - births and deaths
    - migration

TABLE 1

SOCIO-ECONOMIC DATA SURVEY: CO-OPERATING DEPARTMENTS AND AGENCIES

Federal Gov[illegible]

Central Mortgage and Housing Corporation
Indian Affairs and Northern Development
Manpower and Immigration
National Health and Welfare
Royal Canadian Mounted Police
Regional Economic Expansion (ARDA 3B)
Statistics Canada

Manitoba Government

Manitoba Health Services Commission
Manitoba Housing and Renewal Corporation
Mines, Resources and Environmental Management
Northern Manpower Corps
Planning and Priorities Committee of Cabinet
Vocational Rehabilitation Services

(2) Labour Force
- totals
- age-sex distribution
- employment status
- industry/occupation distribution
- seasonal employment patterns
- skills
- supply/demand trends

(3) Family
- totals
- size
- employment/occupation patterns
- incomes by source
- expenditures
- distribution by income and size

(4) Other
- housing
- health and welfare
- education
- disorders
- communication characteristics

All these working documents can, of course, be provided to the Study Board upon request, or indeed, to any sub-contractor, eg. tourism and recreation as required. The 104 supporting tables are listed in Appendix A of this report.

The remainder of this report will focus upon two distinct subject areas:

(a) a synopsis of the five communities under investigation, as reflected in the data gathered and analyzed to date;

(b) an evaluation of the accuracy and relevance of this data to the Study Board's entire research programme.

This report will not in any formal sense present the data which has been accumulated under the contract of September 28, 1972. To reiterate, however, this information can be made available to any of the participants in the research process.

2. COMMUNITY PROFILE ANALYSIS

What follows below is a very brief description (based upon existing data and information) of the five communities under scrutiny in this phase of the research programme. The focus, moreover, is primarily on the current (1970/72) status of these communities, rather than on their historical development status. Where appropriate, however, historical information has been provided, eg. population totals.

Clearly, the five settlements under discussion here are all native communities, Cross Lake and Nelson House being primarily registered Indian communities, with Norway House/Rossville, South Indian Lake, and Warren Landing all falling within the category of mixed (Indian and Metis) communities. To the extent that information is available, the population/labour force structure of these communities is as might be expected: a high proportion of population is under the age of 15 years, families are reasonably large, and the participation rate for women is generally low. The incidence of unemployment is high among both males and females, but especially in the latter case, where rates of unemployment of 80-90 per cent are not uncommon.

With perhaps the one exception of Warren Landing, all communities under scrutiny still continue to report large percentages of their labour force engaged in seasonal, traditional activities such as fishing, trapping and to a lesser extent lumbering. No age distributions are, however, available. Both Norway House/Rossville and Cross Lake appear to possess a significant permanent job sector, particularly in government activities -- although it may be hypothesized that a high percentage of these jobs are held by the non-native people in the community.

By the admission of all agencies involved (Indian Affairs Branch, Manpower and Immigration, Northern Manpower Corps, and Vocational Rehabilitation Services), a comprehensive skill inventory of these communities is lacking. Indeed, only recently have education facilities in these settlements been enlarged and upgraded.

As the above information would suggest, all these communities (with perhaps the one exception of South Indian Lake) are characterized by low incomes for the majority of the population and a high incidence of welfare. In general, the problems of these communities are compounded further by very high prices for food and other items, and by a lack of adequate housing. Unfortunately, no precise population-labour force-income data base exists to date within which to analyze these communities. In addition, the R.C.M.P. have yet to provide Acres Consulting Services with social disorder data on these settlements.

2.1 NORWAY HOUSE/ROSSVILLE

Given that many of the Departments and Agencies approached for information for use in this report do not differentiate between Norway House and Rossville, these 2 communities have been treated here as a single entity -- rather than as a distinct Metis community (Norway House) and a distinct Indian community (Rossville).

In 1971, the population of Norway House/Rossville was estimated in the range of 2,600 to 2,800 people, of which 1,800 to 1,900 were registered Indians living on the Norway House reserve. The remainder were by and large of Metis extraction, although the Northern Manpower

Corps did estimate that 200 "others" were located in the community.

The population appears to have been growing steadily. In 1958, for example, Lagasse estimated the combined Indian and Metis population at 1,736; by the 1966 census, the population was 2,142.

As is characteristic of most communities containing a high proportion of native peoples, the population of Norway House/Rossville is highly skewed in distribution towards the young -- of the 2,762 residents residing in the community in 1971, the Manitoba Health Services Commission (M.H.S.C.) estimated 1,286 were under the age of 14 years.[1] Very little, however, is known of the incidence of birth, death and migration in Norway House/Rossville -- in 1969, Manitoba Newstart estimated that 86 per cent of the Norway House population was born in the project area; national statistics would suggest a relatively high infant death rate within the registered Indian population.

No comprehensive data are available on the labour force of Norway House/Rossville. An Indian Affairs Branch survey in 1970, however, suggested participation rates (16-44 years)for registered Indians of 80.0 per cent for men and 39.0 per cent for women, coupled with unemployment rates of roughly 58.0 per cent for both sexes. The Northern Fact estimated 290 jobs in the entire community in 1971, 110 of which were permanent (primarily in government and trade sectors), while 90-100 were concentrated in trapping, 15-20 in forestry and 55-60 in fishing. Fishing, of course, occurs primarily in the summer (Playgreen, Molson and Lawford Lakes), with trapping and lumbering occupying the winter/spring season. Gross income in 1971 approximated $119,000. for fishing and $37,000. for trapping; net income from permanent employment was estimated at $514,000.[2]

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[1] The high proportion of young is reflected in family size distributions; of the 884 families in the community in 1971, M.H.S.C. estimates 102 families had 8 or more members.

Very little information exists on skills. The Northern Manpower Corps, for example, lists only 8 carpenters in the community, plus 5 heavy equipment operators and 1 welder.

The incidence of general welfare (social assistance) is high in the community; the Northern Fact reported that in 1969, 1,216 persons received social assistance (of which 225 were family heads). A relatively low level of income is, however, combined with higher costs (food costs are estimated to be 59 per cent higher than in Winnipeg) and -- apparently -- relatively poor housing.

As indicated previously, no social disorder data has as yet been provided by the R.C.M.P. on Norway House/Rossville. Education data,is, however, sufficiently comprehensive to suggest current enrollments of approximately 700 in the 6 schools in the community.

2.2 CROSS LAKE

Cross Lake is a predominately Cree Indian community of 1,900 persons (1,500 of whom are registered Indians) located on the shores of Cross Lake in northern Manitoba. According to 1971 statistics prepared by the Manitoba Health Services Commission, over 50 per cent of the population is under fifteen years of age. Again, the population appears to have grown rapidly -- from a combined Indian and Metis population of 1,151 persons in 1958 (Lagasse estimate) to 1,900 in 1971. Manitoba Newstart estimated that in 1969, 92.6 per cent of the population over 13 years of age were born within the project area.

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[2] Manitoba Newstart data clearly indicates that those born outside of the project area (and especially outside of Manitoba) enjoy higher incomes and a higher incidence of permanent employment.

With reference to labour force data, the Indian Affairs Branch survey of 1970 estimated participation rates (16-44 years) for registered Indians in Cross Lake at 74.3 per cent for males, 52.4 per cent for females. The unemployment rate at the time of the survey, though, was relatively high -- 42.5 per cent for males and 83.7 per cent for females. The Northern Manpower Corps has, however, recently announced that 290 men in Cross Lake have been placed in positions over the last year -- 75 in hydro related.jobs. To the extent that the same individuals are not being placed repeatedly into different positions and to the extent that traditional occupations are not being abandoned (no information is presently available on either point), then the unemployment rate among males in the community should have dropped substantially since 1970.

The latest information (1969-1970) available on industry/occupation structure in Cross Lake would suggest that there exist 40-50 permanent jobs in the community (the majority held by men), 100-110 in trapping, 15-20 in forestry and 15-20 in fishing. The number of men engaged in fishing has in particular declined sharply over the last decade. Fishing occurs primarily in the summer, with logging and trapping occupying the winter months and sawing of lumber the spring.

The Northern Manpower Corps partial skill inventory lists 5 carpenters in the community, in addition to 2 electricians, 5 heavy equipment operators, 2 mechanics, 2 plumbers, 1 welder and 9 blasters.

While a Vocational Rehabilitation Services survey of male unemployed employables in the community indicated a high interest in training (especially in heavy construction) very few demonstrated any preference for work outside of Cross Lake.

In 1969, 1,095 registered Indians in Cross Lake received some form of social assistance. No recent comprehensive estimates are, however, available on total income or on income by source in the community, although gross income in 1971 did approximate $67,000 from fishing and $27,000. from trapping. Food prices in 1971 were similar to those prevailing in Norway House/Rossville — 57 per cent above Winnipeg levels.

In contrast to Norway House/Rossville, however, the housing in Cross Lake is not as old in terms of age — slightly less than two-thirds of all houses on the reserve were less than 10 years old. The Manitoba Housing and Renewal Corporation has been involved in the construction of houses here under its remote housing programme.

Indian Affairs Branch statistics indicate a total enrollment in Cross Lake schools in 1971/72 of 668 children, of which 576 were registered Indians. This enrollment figure may be compared to the 163 children who were enrolled at the Cross Lake Roman Catholic school in 1958, when the population totalled 1,151 persons.

2.3 NELSON HOUSE

Various estimates have been promulgated with reference to the 1971 population of Nelson House. The Manitoba Health Services Commission, for example, estimates a population of 1,504, whereas the Indian Affairs Branch suggests that 1,020 members of the Nelson House band reside on reserves, (fewer than 100 non-Indians are estimated to reside in the community). For the purposes of this report, the 1971 population has been tentatively set at approximately 1,300 people, up from 847 in 1966 and a combined Indian/Metis population of 694 in 1958.

Similar to Norway House/Rossville and Cross Lake, over 50 per cent of the population of this community is under 15 years of age. Twelve registered Indian deaths, moreover, were reported in Nelson House during the period April, 1971, to September, 1972 -- 3 of which were infants under the age of one year.

No estimates on migration from and to Nelson House are directly available, aside from a Manitoba Newstart estimate that, in 1969, 79.3 per cent of the population surveyed in the project area (Nelson House) were born there.

Once again, reliance has had to be placed on the 1970 Indian Affairs Branch survey for data on labour force. This survey indicates that the participation rates (16-44 years) in Nelson House in that year were 76.6 per cent and 37.0 per cent respectively for males and females. Unemployment rates were similar to those for Cross Lake -- 36.5 per cent for males, 79.6 per cent for females.[3]

A review of industry/occupation statistics suggests the following structure: 15-20 permanent jobs, 75-85 in trapping and 30-35 in fishing. Gross income from trapping in 1970-71 was approximately $38,500, while fishing income in 1971 (14 fishermen) approximated $11,000. Although a saw mill is located at Nelson House, lumbering is not as yet a major activity in the community, due (apparently) to lack of local initiative.

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[3] A 1969 Indian Affairs Branch survey, however, suggested an unemployment rate for Indian women of 14.8 per cent. This discrepancy has not as yet been explained.

With reference to skills, the partial skill inventory of Northern Manpower Corps lists 9 carpenters, 3 electricians, 15 heavy equipment operators, 1 welder and 1 surveyor as residing in the community. Vocational Rehabilitation Services has not done a survey of unemployed employables in this community to date.

In 1969, 973 Indians in Nelson House received some form of social assistance, either as the head of a household or as a dependent. Again, food prices here were substantially higher than in Winnipeg -- 59 per cent higher as indicated by a 1971 Department of National Health and Welfare survey. The age distribution of houses on the reserve, moreover, was similar to that of Norway House/Rossville; over 45 per cent of houses were over 10 years of age.

A review of data on education indicated that in 1971/72, 321 children (of which 280 were registered Indians) were enrolled in classes from kindergarten to Grade 8 in the 2 Indian day schools located in the community. Carpentry, home management and recreation courses were also held by the Indian Affairs Branch in that year for registered Indians of the Nelson House band.

2.4 SOUTH INDIAN LAKE

South Indian Lake is not located on or near an Indian reservation, and probably for this reason, fewer statistics are available on this community than on the other communities examined thus far. The 1971 census, however, has estimated the population at 590, of which approximately 470 may be expected to be registered Indians of the Nelson House band, with the remainder of Metis extraction. This population total can be compared to the Lagasse (1958) estimates of 230 Indians and 101 Metis, or to the Van Ginkel/Hedlin, Menzies (1967) estimates of 363 Indians, 101 Metis and 10 "others".

Registered Indian deaths in South Indian Lake over the period April, 1971 - September, 1972, totalled only 3, of which one was the death of a child under 14 years of age.

Sharp discrepancies appear with reference to labour force participation rate estimates. The 1970 Indian Affairs Branch survey, for example, suggested participation rates of 66.7 per cent for males and 55.1 per cent for females, while a similar survey in 1969 had estimated participation rates at 93.8 per cent for males and 54.0 per cent for females. This apparent discrepancy may only be resolved by determining whether or not at least 24 males withdrew from the labour force between 1969 and 1970.

As might be expected from the above, estimates of unemployment rates for males also vary significantly -- from 30.8 per cent in 1970 to 19.7 per cent in 1969. Estimates of female unemployment rates have, however, been reasonably consistent -- 90.7 per cent in 1970 and 83.0 per cent in 1969.

Industry/occupation data is limited to estimates of employment and gross income from trapping and fishing. In 1970/71, there were 91 active trappers in the South Indian Lake section (excluding those trappers from Pukatawagan), with a gross income of $32,700; these figures may be compared to 1965/1966 data reported in the Van Ginkel/Hedlin, Menzies study of 112 active trappers, with value of catch estimated at $56,800. According to Indian Affairs Branch statistics, moreover, there were 72 Indian and 28 non-Indian men engaged in 1971 in fishing Southern Indian and Opachuamou Lakes, earning (in gross income terms) $120,000. from summer fishing and $58,000 from winter (1971/1972) fishing. The South Indian Lake Fishing Co-op is currently targeting for a gross income of $320,000. for its 80 members -- about twice the 1960-1966 average total value received, as reported in the aforementioned study.[4]

No recent estimates are available with reference to current seasonal patterns of economic activity. The Van Ginkel/Hedlin, Menzies report, however, did specify the following pattern of activity in 1967:

September 1/October 31	Fall Fishing
November 1/January 15	Trapping
January 15/January 30	Rest
February 1/March 31	Winter Fishing
April 1/June 15	Trapping
June 15/August 31	Summer Fishing

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[4] The Van Ginkel/Hedlin, Menzies report estimated 1965 net income in the community of $136,000 from fishing; using 1965/1966 gross income figures, this implies expenses of 11.2 per cent for this activity.

Data on skills of the labour force is limited to the Northern Manpower Corps partial skill inventory. The N.M.C. lists 11 heavy equipment operators, 3 blasters and 1 surveyor as being resident in the community.

Again, no current data are available on family income/ occupation characteristics in South Indian Lake, but unlike the other four communities under scrutiny here, 1967 statistics have been prepared for this community. In particular, data are provided on distribution of income by source of income -- indicating that in 1967, the majority of households (73.8 per cent) received less than 500 dollars from unearned income sources, eg. welfare, pensions. No household, moreover, had a total income in that year of less than 5,000 dollars; indeed, 13 of 61 households reported incomes of greater than 5,000 dollars.

Social allowance data for 1969 confirmed the usual impression of South Indian Lake as a community virtually without welfare; only 8 social allowance cases were handled in that community in that year. No data were, however, available to verify whether or not such circumstances held after 1969 (the decline in the male participation rate suggests that welfare payments probably increased sharply in 1970.)

Notwithstanding the relatively high degree of self-sufficiency in the community, South Indian Lake residents have had to face problems of very high prices for food (74.5 per cent above the Winnipeg level in 1971) and very old housing (70 per cent of Indian housing in 1969/70 was over 20 years old). Education facilities have, however, expanded markedly since 1967, when 3 teachers were employed in the community; by 1970, South Indian Lake had 7 teachers and 7 classrooms, including a separate kindergarten.

2.5 WARREN LANDING

Of all five communities examined, Warren Landing has the least amount of information on record. No 1971 census estimates are available, but the Department of Regional Economic Expansion has estimated the population at 27. The 1966 census population was 36; Lagasse estimated that 22 Metis lived in the community in 1958.

No cultural or age breakdown of population is available, although it is known that some registered Indians do reside in the community -- since 2 Indian children were enrolled in school there in 1971/72.

It has been ascertained that with reference to labour force activity, no residents have been actively engaged in fishing since at least 1969 -- despite the existence of fish stations in the community. These facilities are apparently used only by Lake Winnipeg fishermen resident at such communities as Gimli and Arnes. Similarly, there is no data on the number of active trappers resident in Warren Landing, given that post office service (the basis for determining location) is handled through Norway House/Rossville.[5]

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[5] Information on trappers in Warren Landing may be provided shortly by the Provincial Conservation Officer in Norway House.

3. RELEVANCY AND ACCURACY OF DATA

This review of socio-economic data sources has revealed a wide variety of information existing on the communities of Norway House/Rossville, Cross Lake, Nelson House, South Indian Lake and Warren Landing. Despite the magnitude of information available, however, certain deficiencies may be noted in the data:

(i) incomplete coverage of data by community, eg. the information compiled by Manitoba Newstart Incorporated in 1969 on residents over the age of thirteen years relates only to Norway House/Rossville, Cross Lake and Nelson House; no surveys were conducted in either South Indian Lake or Warren Landing

(ii) incomplete coverage of data by source, eg. neither the Department of Manpower and Immigration, the Indian Affairs Branch, the Northern Manpower Corps or Vocational Rehabilitation Services have prepared a comprehensive skill inventory for any of these communities

(iii) absence of data, eg. virtually no statistics are available on either historical or current patterns of births, deaths and/or migration in these communities

(iv) outright discrepancies in data, eg. the VRS survey of male unemployed employables in Norway House contains numerous errors in classification of data; similarly, the 1970 Indian Affairs Branch survey of Norway House, while suggesting in summary tables that 615 persons between the ages of 16 and 44 years reside on the reserve, actually lists only 560 persons (residing both on and off the reserve).

(v) apparent discrepancies in data, eg. estimates of male participation rates in South Indian Lake vary from 93.8 per cent in 1969 to 66.7 per cent in 1970.

(vi) absence of historical data -- with the exception of certain population and occupation data, very little information is available on these 5 communities prior to 1969; given, moreover, that the appearance of data is often erratic, analysis of underlying trends in population, labour force or any other variable becomes increasingly difficult.

It should be stressed here that the availability of Indian reserve population data and of trapping and fishing statistics from at least 1965 does provide the opportunity for certain general commentary on population growth, age-sex distribution[6], potential labour force, trends in traditional employment and gross income received from trapping and fishing by community; certain discussions on the basis of school enrollment data are also possible. In general, a brief perusal of literature dealing with economic opportunities for Indians and Metis (including a number of Hedlin, Menzies reports on Indian reserves in the Interlake region) suggests that the above are roughly the parameters within which most researchers have worked in analyzing the socio-economic status of the native people[7].

Existing data, however, appear to be deficient with reference to the framework established in the Acres Consulting Services Ltd. document of September 8, 1972, entitled Outline of Framework for Socio-Economic Analysis. Specifically, that document makes the following assumptions:

(1) that family income provides the best available general indicator of socio-economic quality of life impact

(2) that it is relevant to identify how specific groups are affected within each community -- particularly native groups who currently earn their living from traditional occupations and who may experience significant changes in occupations

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[6] It would be necessary to assume, of course, that the age-sex distribution of the Metis population approximated that of the registered Indian population.

[7] See, for example, Federal Field Committee for Development Planning in Alaska, Alaska Natives and the Land, (Anchorage: 1968).

(3) that breakdown of family income impacts by changes in source of income for specific occupation groups within a community provides a quantitative basis for qualitative professional evaluation of likely transitional and other social problems.

(4) that the analysis will require integration of many specific socio-economic research tasks (population impact, resource employment impact by skill category, price inflation impact, etc.).

Clearly, existing data are not available on the comprehensive basis implied by the above framework; with few exceptions (the Van Ginkel/Hedlin, Menzies study of South Indian Lake in 1967 is one exception), the only data provided on families in these communities is the number and distribution of families by size. In other words, virtually no information is available on total net income by family, occupations by family (including the incidence of employment in 2 or more occupations), or income by source. Furthermore, the process of identifying potential opportunities for local residents from hydro development is hindered by the lack of a current and comprehensive data base on educational attainment and skill levels.[8]

To a considerable extent, this deficiency will be overcome by the Human Resources Survey presently being conducted by the Indian Affairs Branch. Reference is made to appendix A of the report of November 3, 1972, where statistical tabulations of the survey are noted; in particular, the following tables may be cited:

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[8] The Manitoba Newstart surveys of 1969 on the communities of Norway House, Cross Lake and Nelson House, while representing a useful departure point for discussion, are outdated, given (a) education and training received by residents since 1969 and (b) migration to and from the community since that date. In addition, no information of this nature is available on either South Indian Lake or Warren Landing.

Table 5	Size of families (boarders being counted as separate families) by settlement and ethnic origin.
Tables 7-8	Languages spoken and written by residents 14 years of age and over, by settlement, ethnic origin, age group and sex.
Table 11	Training courses taken by residents 14 years of age and over, by settlement and ethnic origin.
Tables 37-42	Family income tables by settlement and ethnic origin: income from wages and salaries, income from traditional occupations, income from self-employment, total earned income, total unearned income and total income from all sources
Table 55	Number of members of labour force who worked full time or part time in each month, by settlement, ethnic origin, age group and sex.
Tables 68-73	Family income by family size tables by number of children under 16 years of age, income group, settlement and ethnic origin: income from wages and salaries, income from traditional occupations, income from self-employment, total earned income, total unearned income, and total income from all sources.

In addition, because information will be stored on computer cards, it may also be possible to arrange for computer sorting routines and print-outs on the following variables:

- languages read
- interest in training, bv course
- willingness to relocate
- primary occupation (see Question 27 of Human Resources Survey form).

To summarize, the existing computer programme for this survey will provide sufficient information to meet most of the criteria set out in the document of September 8, 1972 — with perhaps the one exception of primary occupation classified by family characteristics, where a distinction between hunting, trapping and fishing occupations may be useful. As implied above, even this deficiency may be overcome by an additional computer subroutine identifying occupation from Question 27 and cross-classifying other data on this basis.

In closing, it may be noted that restricting the survey to the original population envisioned by the Indian Affairs Branch will result (assuming a 70 per cent response rate) in only 50.4 per cent of the population being covered in the twelve native communities noted in the Acres report of November,3, 1972. Similarly, for the five native communities under special scrutiny -- Norway House/Rossville, Cross Lake, Nelson House, South Indian Lake and Warren Landing -- 61.4 per cent of the population would be surveyed. In other words, the coverage would not be very much greater than that achieved in previous Indian Affairs Branch and other surveys[9] (it is assumed, moreover, that the Study Board would seek to achieve a response rate higher than 70 per cent in its own section of the survey); a reasonably comprehensive and current profile of these communities would not be possible.

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[9] Where a community is almost without exception populated by registered Indians, the above statement does not, of course, hold.

APPENDIX A

List of Supporting Tables for Socio-Economic Data Research

Table 1 - Age-Sex Distribution: Norway House Reserve Population, 1971

2 - Age-Sex Distribution: Norway House/Rossville Population, 1971

3 - Registered Indian Deaths by Cause: Community of Norway House/Rossville April, 1971-September, 1972

4 - VRS Survey of Unemployed Males in Norway House/Rossville: Education Status Achieved

5 - VRS Survey of Unemployed Males in Norway House/Rossville: Training Status Achieved

6 - Norway House Reserve Population: Special Training Statistics, 1970

7 - Norway House Reserve: Labour Force Age-Sex Distribution, 1969

8 - Norway House BTSD Manpower Training Statistics, 1971-72

9 - Educational Achievement: Norway House/Rossville Population 13 Years and Older, 1969

10 - Age-Sex Population Distribution: Metis Community of Norway House, 1961

11 - Age-Sex Population Distribution: Metis Community of Norway House, 1966

12 - School Enrollment: Community of Norway House, 1965-66 to 1969-70

13 - Number of School Rooms: Community of Norway House, 1965-66 to 1967-68

14 - 1969 Newstart Estimates of Norway House/Rossville Population: Age by Working Status by Sex

15 - 1969 Newstart Estimates of Norway House/Rossville Population: Looking for Work by Age and Sex

16 - 1969 Newstart Estimates of Norway House/Rossville Population: Looking for Work by Place of Birth

Table 17 - 1969 Newstart Estimates of Norway House/Rossville Population: Training Since School by Age and Sex

18 - 1969 Newstart Estimates of Norway House/Rossville Population: Training Since School by Highest Grade Completed and Sex

19 - 1969 Newstart Estimates of Norway House/Rossville Population: Training Since School by Place of Birth and Sex

20 - 1969 Newstart Estimates of Norway House/Rossville Population: Course Completed Successfully by Age and Sex

21 - 1969 Newstart Estimates of Norway House/Rossville Population: Course Completed Successfully by Highest Grade Completed and Sex

22 - 1969 Newstart Estimates of Norway House/Rossville Population: Interest in Training by Age and Sex

23 - 1969 Newstart Estimates of Norway House/Rossville Population: Interest in Training by Highest Grade Completed and Sex

24 - 1969 Newstart Estimates of Norway House/Rossville Population: Interest in Training by Working Status and Sex

25 - 1969 Newstart Estimates of Norway House/Rossville Population: Interest in Training by Weeks Worked and Sex

26 - 1969 Newstart Estimates of Norway House/Rossville Population: Interest in Training by Work Income Received and Sex

27 - 1969 Newstart Estimates of Norway House/Rossville Population: Interest in Training by Best Time of Year for Training and Sex

28 - 1969 Newstart Estimates of Norway House/Rossville Population: Work Income Received by Age and Sex

Table 29 - 1969 Newstart Estimates of Norway House/Rossville Population: Work Income Received by Place of Birth and Sex

30 - 1969 Newstart Estimates of Norway House/Rossville Population: Type of Assistance Received by Age and Sex

31 - 1969 Newstart Estimates of Norway House/Rossville Population: Highest Grade Completed by Place of Birth and Sex

32 - 1969 Newstart Estimates of Norway House/Rossville Population: Highest Grade Completed by Working Status and Sex

33 - 1969 Newstart Estimates of Norway House/Rossville Population: Highest Grade Completed by Work Income and Sex

34 - Age-Sex Population Distribution: Cross Lake, 1971

35 - Age-Sex Distribution of Cross Lake Reserve Population, 1971

36 - Registered Indian Deaths by Cause: Community of Cross Lake April, 1971 - September, 1972

37 - VRS Survey of Unemployed Males in Cross Lake: Educational Achievement

38 - VRS Survey of Unemployed Males in Cross Lake: Training Achievement

39 - VRS Survey of Unemployed Males in Cross Lake: Primary Occupational Skill

40 - VRS Survey of Unemployed Males in Cross Lake: Interest in Training

41 - Cross Lake BTSD Manpower Training Statistics, 1971-72

42 - Educational Achievement: Cross Lake Population 13 Years and Older, 1969

Table 43 - Cross Lake Reserve: Labour Force Age-Sex Distribution, 1969

44 - Cross Lake Reserve Population: Special Training Statistics, 1970

45 - School Enrollment: Community of Cross Lake, 1965-66 to 1969-70

46 - Number of School Rooms: Community of Cross Lake, 1965-66 to 1968-69

47 - 1969 Newstart Estimates of Cross Lake Population: Age by Working Status and Sex

48 - 1969 Newstart Estimates of Cross Lake Population: Looking for Work by Age and Sex

49 - 1969 Newstart Estimates of Cross Lake Population: Training Since School by Age and Sex

50 - 1969 Newstart Estimates of Cross Lake Population: Course Completed Successfully by Age and Sex

51 - 1969 Newstart Estimates of Cross Lake Population: Course Completed Successfully by Highest Grade Completed and Sex

52 - 1969 Newstart Estimates of Cross Lake Population: Interest in Training by Age and Sex

53 - 1969 Newstart Estimates of Cross Lake Population: Interest in Training by Highest Grade Completed and Sex

54 - 1969 Newstart Estimates of Cross Lake Population: Interest in Training by Working Status and Sex

55 - 1969 Newstart Estimates of Cross Lake Population: Interest in Training by Weeks Worked and Sex

56 - 1969 Newstart Estimates of Cross Lake Population: Interest in Training by Work Income Received and Sex

Table 57 - 1969 Newstart Estimates of Cross Lake Population: Interest in Training by Best Time of Year for Training and Sex

58 - 1969 Newstart Estimates of Cross Lake Population: Work Income Received by Age and Sex

59 - 1969 Newstart Estimates of Cross Lake Population: Work Income Received by Place of Birth and Sex

60 - 1969 Newstart Estimates of Cross Lake Population: Type of Assistance Received by Age and Sex

61 - 1969 Newstart Estimates of Cross Lake Population: Type of Assistance Received by Highest Grade Completed and Sex

62 - 1969 Newstart Estimates of Cross Lake Population: Highest Grade Completed by Place of Birth and Sex

63 - 1969 Newstart Estimates of Cross Lake Population Highest Grade Completed by Working Status and Sex

64 - 1969 Newstart Estimates of Cross Lake Population: Highest Grade Completed by Work Income and Sex

65 - Age-Sex Population Distribution: Nelson House, 1971

66 - Age-Sex Distribution: Nelson House Reserve Population, 1971

67 - Registered Indian Deaths, by Cause: Community of Nelson House, April, 1971 - September, 1972

68 - VRS Food Cost Survey: Nelson House, December, 1970

69 - Food Prices in Nelson House, January, 1970

70 - Nelson House BTSD Manpower Training Statistics. 1971-72

71 - Educational Achievement: Nelson House Population 13 Years and Older, 1969

72 - Nelson House Reserve: Labour Force Age-Sex Distribution, 1969

Table 73 - School Enrollment: Community of Nelson House 1965-66 to 1969-70

74 - Number of School Rooms: Community of Nelson House 1965-66 to 1968-69

75 - 1969 Newstart Estimates of Nelson House Population: Age by Working Status and Sex

76 - 1969 Newstart Estimates of Nelson House Population: Looking for Work by Age and Sex

77 - 1969 Newstart Estimate of Nelson House Population: Looking for Work by Place of Birth and Sex

78 - 1969 Newstart Estimates of Nelson House Population: Training Since School by Age and Sex

79 - 1969 Newstart Estimates of Nelson House Population: Highest Grade Completed by Training Since School and Sex

80 - 1969 Newstart Estimates of Nelson House Population: Training Since School by Place of Birth and Sex

81 - 1969 Newstart Estimates of Nelson House Population: Course Completed Successfully by Age and Sex

82 - 1969 Newstart Estimates of Nelson House Population: Highest Grade Completed by Course Completed and Sex

83 - 1969 Newstart Estimates of Nelson House Population: Training Since School by Working Status and Sex

84 - 1969 Newstart Estimates of Nelson House Population: Training Since School by Work Income and Sex

85 - 1969 Newstart Estimates of Nelson House Population: Interest in Training by Age and Sex

86 - 1969 Newstart Estimates of Nelson House Population: Interest in Training by Highest Grade Completed and Sex

87 - 1969 Newstart Estimates of Nelson House Population: Interest in Training by Working Status and Sex

Table 88 - 1969 Newstart Estimates of Nelson House Population: Interest in Training by Weeks Worked and Sex

89 - 1969 Newstart Estimates of Nelson House Population: Interest in Training by Work Income Received and Sex

90 - 1969 Newstart Estimates of Nelson House Population: Interest in Training by Best Time of Year for Training and Sex

91 - 1969 Newstart Estimates of Nelson House Population: Work Income Received by Age and Sex

92 - 1969 Newstart Estimates of Nelson House Population: Work Income Received by Place of Birth and Sex

93 - 1969 Newstart Estimates of Nelson House Population: Type of Assistance by Highest Grade Completed and Sex

94 - 1969 Newstart Estimates of Nelson House Population: Highest Grade Completed by Place of Birth and Sex

95 - 1969 Newstart Estimates of Nelson House Population: Highest Grade Completed by Working Status and Sex

96 - 1969 Newstart Estimates of Nelson House Population: Highest Grade Completed by Work Income and Sex

97 - Age-Sex Population Distribution: South Indian Lake, 1971

98 - Age-Sex Distribution: Nelson House Band on Crown Land (South Indian Lake)

99 - Registered Indian Deaths, by Cause: Community of South Indian Lake, April, 1971 - September, 1972

100 - South Indian Lake BTSD Manpower Training Statistics, 1971-72

101 - South Indian Lake: Indian Labour Force Age-Sex Distribution, 1969

102 - School Enrollment: Community of South Indian Lake, 1969-70

103 - Preliminary Peak Labour Force Estimates, by Manitoba Hydro Project Component, 1972-76

104 - Estimates of Jobs Available by Trade, Jenpeg Control Structure, 1972-76

GENERAL EXPLANATION OF TABULATIONS

Identification

Each survey region is clearly identified in the upper left-hand corner of each table. The survey year for each region, i.e., the 12-month period for which the data were obtained, is plainly identified in the title of each table. For those tables broken down by settlement and sex, an indication is given on the upper left-hand portion of each table, as is ethnic origin (in the case of the Mackenzie Manpower Survey).

If either "male" or "female" appears on the tables without specification of a settlement, the table refers to the males or females for the whole particular survey region. In the case of the Mackenzie Manpower Survey, there will also be ethnic group designations in the regional totals tabulations series. If no designation as to sex or settlement appears on a table, the tables provides figures for the total population of the particular region.

Use of Percentages

For each cross-classification, both absolute numbers and percentages are given. The percentages are shown below the absolute numbers and are specified to two decimal places, e.g., 9342 is 93.42 per cent.

Normally, there is only one percentage expressed below the absolute number. This expresses the absolute number as a percentage of the horizontal total. If there are two percentages expressed below the absolute number, the first percentage expresses the absolute number as a percentage of the horizontal total; the second percentage expresses the absolute number as a percentage of the vertical total. The total figure of which the number is a percentage is always given as 10000, i.e., 100.00 per cent.

Grouping of Tables

For the sake of economy, the tabulations were produced in groups. Consequently, although it was desirable to obtain, for example, separate tables for men and women who worked for wages and salaries, the table for females employed in hunting, trapping and fishing is extraneous. In such cases, since each table is clearly identified, tables of this nature may be removed from the set.

It will be noted that the tables are grouped according to various subject categories, also done for the sake of economy. This may make the order of the various subjects of the tabulations program appear less than logical.

Splitting of Tables

A single table may cover several pages since the size of either the horizontal or vertical variable may have been too large to fit on one page. The details may be found on one page, with the totals on the succeeding page.

DEFINITION OF TERMS

Unknown: (UNK) means that the response on the questionnaire was not within the range of variables coded and therefore not expected by the computer. Generally, it means that the particular information was not specified, i.e., not given on the questionnaire.

Household: A household is the group of people listed as living together in the same dwelling, and includes boarders or lodgers living with a particular family. Unrelated persons living in a dwelling such as a hotel, bunkhouse, school hostel or camp are considered as belonging to the same household.

Ethnic Origin: (Indian, Eskimo, etc.) In the case of Eskimos, the term Eskimo is given to those shown on the Eskimo Disc List, i.e., the registration roster, or to those persons who claim to be Eskimo. In the case of Indian and Metis, the individual respondent gave his or her own designation. The term "other" refers to all who do not claim to be Indian. Eskimo, Metis.

Languages Spoken: A person is listed as able to speak a language if he can speak it easily for long periods, e.g., to answer the questionnaire.

Languages Read: A person should be able to read letters or books in the language. (This applies also to Languages Written.)

Grade Completed: This refers only to standard schools and not to northern vocational centres such as the Churchill Vocational Centre.

Courses: These include not only courses taken at higher level institutions such as universities, technical schools, specialized institutes and apprenticeship programs, but also all territorial and federal government-sponsored courses taken by N.W.T. residents both in N.W.T. vocational schools and at special training courses given by various government departments. An example of the latter would be the Department of Defence heavy equipment operation course at Chilliwack, B.C. Also included under this category are skills learned in on-the-job training situations. It should be noted, however, that the information presented in tabulations on courses applies only to course attendance, not completion.

Journeyman's or Trades Certificate: A certificate awarded by a provincial, territorial or other government authority through applicable regulations to persons who have finished their apprenticeships in skilled trades.

Number of Weeks (with work, without work): This is the sum of the number of weeks in which persons worked (for wages and salary, hunting trapping or fishing, self-employed) whether full-time or part-time.

Without work: This term is applied to all able-bodied persons under 40 years of age except housewives. It means that those persons, although capable of working and whether actively seeking work or not, were not working for wages and salaries, hunting, trapping and fishing, or self-employed. The term "without work" has been used in place of the usual term "looking for work", since in the North it is difficult to ascertain, particularly in the small communities, just how persons looked for work.

Keeping House, Retired or Voluntarily Idle: This term has been applied to housewives and to all persons who did not fit into the "without work" category. Note, however, that if persons did any of the other activities (question 27 of the questionnaire) they were not assigned to this category.

Income from Wages and Salary: This includes payment received for work done whether on a prevailing rate, casual employment or piece rate basis, and is gross income.

Income from Hunting, Trapping and Fishing: This is the gross income obtained from any one or combination of these activities. For the Keewatin Manpower Survey, the information came primarily from the N.W.T. Fur Trader's Record Book; in the other regions surveyed, primarily from the respondents themselves. The figures include income earned from harvest of white fox, polar bear, seals, fish, etc.

Income from Self-Employment: For the Keewatin Manpower Survey, this category applied exclusively to income earned from production of handicrafts - sewing, carving. For the Baffin and Arctic Coast Manpower Surveys, better than 95 per cent of the income from self-employment would derive from handicraft production. In the Mackenzie Manpower Survey, however, income from self-employment comes from a wide variety of activities, of which handicraft production would be only one.

Income from Family Allowance: Money paid out through Family Allowance cheques under the national act.

Income from Old Age Pensions: Includes payments made through the Canada Pension Plan and through the Old Age Assistance Program administered by the N.W.T. Government.

Other Income from Government Sources: This includes all other transfer payments (unearned income) not covered in the above categories, such as social assistance payments for various reasons; training allowances; for provision of boarding home or foster home care; also disability allowances.

Kinds of Work (in past 12 months, past 7 years): Every effort has been made to fit kinds of work done or occupations given by N.W.T. residents into standard occupational classifications. The category "labourer" is a standard government employment definition and may include many unskilled or semi-skilled occupations. Some individuals who have done relatively skilled work but who had no trades qualifications were listed as semi-skilled, e.g., trades helpers such as plumber's helper.

EXPLANATION OF INDIVIDUAL TABLES

Table 6 - Number of Places of Residence for N.W.T. Residents 14 Years of Age and Over, by Settlement, Age and Sex

This table refers to the least number of places of residence that the persons have lived in, i.e., it means that the persons have lived in at least that number of places. One means one or more places of residence, two means two or more, etc.

Tables 7, 8 - Languages Spoken, Languages Written (respectively)

The expressions ESKIMO ENGLISH, or INDIAN ENGLISH, mean that the persons speak (write) both English and Eskimo, or English and Indian.

Table 10 - Attendance at N.W.T. Vocational Centers

Along the horizontal axis this table shows the numbers of persons who have received certificates from the particular N.W.T. vocational training centers ("Yes"), those who did not complete the course ("No"), and those who were enrolled at the time of the particular survey ("Now Attend").

Table 11 - Training Courses Taken by N.W.T. Residents

This table shows the kinds of training courses taken by residents and shows whether any persons have had more than one type of training. Limitations imposed by the computer program have made it necessary to abbreviate the names of many of the courses.

Table 14 - Number of Weeks Engaged in Specific Activities

This table is designed to show the number of weeks persons worked at certain activities. The vertical axis shows the number of weeks in which a person was engaged in a specific activity, e.g., wage and salary work. The horizontal axis shows the number of weeks the persons worked (earned income) at the activities of working for wages or sllary plus hunting, trapping and fishing plus being self-employed plus being without work. In reading down the columns of this table, it can be discovered how many persons who belonged to the labour force (i.e., worked for not less than 25-31 weeks at one or a combination of these activities), worked at a particular activity, e.g., wage employment, hunting, trapping and fishing, etc. for how many weeks. The vertical column under the heading 46-52 weeks in the labour force refers to the full-time labour force according to the D.B.S. definition, by which, to belong to the labour force, a person must have worked at one of the above-mentioned activities for not less than 46 weeks. (This latter definition of "labour force" is used in all the other tables.) By reading down this column it can be discovered how many members of the full-time labour force were engaged in each of the various activities for what periods of time.

Table 24 - Rates of Participation by N.W.T. Residents 14 Years of Age and Over in the Labour Force

This table shows the number of persons 14 years of age and over who belonged to the labour force (46-52 weeks) (LAB FORCE) and the number who did not belong, i.e., worked less than 46 weeks (NON LAB FORCE).

Table 57 - Occupations held by N.W.T. Residents 14 Years of Age and Over

This table shows the types of work held by residents. Because of the necessity of using abbreviations, the full list of occupations appears in Appendix B.

Table 58 - Number of Members of the Labour Force without Work in a Selected Week

This table shows the number of persons working and the numbers not working in a particular reference week. The reference week for each of the four stages of the N.W.T. Manpower Survey differs.

STATISTICAL TABULATIONS PRODUCED FROM THE N.W.T. MANPOWER SURVEY

NOTE: All tables have been printed by the computer to summarize the data for each settlement of each survey region as well as for the whole of each of the four survey regions. The same series of tabulations have been produced for each of the four survey regions. For the survey regions of the Keewatin, Baffin and Arctic Coast, the tables relate only to the Eskimo population. For the Mackenzie, the tables relate to Indian, Eskimo, Metis and Other groups.

BASIC DEMOGRAPHIC TABLES

✓ Table 1	Population of the N.W.T. by Four-Year Age Group, Settlement, Ethnic Origin and Sex.
Table 2	Not produced.
Table 3	Marital Status of N.W.T. Residents by Settlement, Ethnic Orign, Age Group and Sex.
Table 4	Relationship to Head of Household of N.W.T. Residents by Settlement, Ethnic Origin, Age Group and Sex.
✓ Table 5	Size of N.W.T. Families (boarders being counted as separate families) by Settlement and Ethnic Origin.
Table 6	Numbers of Places of Residence of N.W.T. Residents 14 Years of Age and Over, by Settlement, Ethnic Origin, Age Group and Sex.

LANGUAGE TABLES

Table 7	Languages Spoken by N.W.T. Residents 14 Years of Age and Over, by Settlement, Ethnic Origin, Age Group and Sex.
Table 8	Languages Written by N.W.T. Residents 14 Years of Age and Over, by Settlement, Ethnic Origin, Age Group and Sex.

EDUCATION AND TRAINING

Table 9	Highest Grade Completed by N.W.T. Residents 14 Years of Age and Over, by Settlement, Ethnic Origin, Age Group and Sex.
Table 10	Attendance at Vocational Training Centers in the N.W.T. by N.W.T. Residents 14 Years of Age and Over, by Settlement, and Ethnic Origin.

	Table 11	Training Courses Taken by N.W.T. Residents 14 Years of Age and Over, by Settlement and Ethnic Origin.
	Table 12	Trade and Journeyman's Certificates obtained by N.W.T. Residents 14 Years of Age and Over, by Settlement and Ethnic Origin.

LABOUR FORCE TABLES

	Table 13	Size of the N.W.T. Labour Force by Settlement, Ethnic Origin, Age Group and Sex.
	Table 14	Number of Weeks engaged in Specific Activities by N.W.T. Residents, 14 Years of Age and Over who worked during the Survey Year, by Settlement and Ethnic Origin.
	Table 15	Number of Weeks without Work for Members of the N.W.T. Labour Force by Settlement, Ethnic Origin and Sex.
	Table 16	Number of Weeks without Work for Members of the N.W.T. Labour Force by Marital Status, Settlement, Ethnic Origin and Sex.
	Table 17	Number of Weeks without Work for Members of the N.W.T. Labour Force by Highest Grade Completed, by Settlement, Ethnic Origin and Sex.
✓	Table 18	Length of Time engaged in Wage or Salary Employment by N.W.T. Residents 14 Years of Age and Over, by Settlement, Ethnic Origin, Age Group and Sex.
✓	Table 19	Lenth of Time engaged in Hunting, Trapping and Fishing by N.W.T. Residents 14 Years of Age and Over, by Settlement, Ethnic Origin, Age Group and Sex.
✓	Table 20	Length of Time engaged in Self-Employment by N.W.T. Residents 14 Years of Age and Over, by Settlement, Ethnic Origin, Age Group and Sex.
	Table 21	Length of Time engaged in Wage or Salary Employment by N.W.T. Residents 14 Years of Age and Over by Highest Grade Completed, Settlement, Ethnic Origin and Sex.
	Table 22	Length of Time engaged in Hunting, Trapping and Fishing by N.W.T. Residents 14 Years of Age and Over by Highest Grade Completed, by Settlement, Ethnic Origin and Sex.
	Table 23	Length of Time engaged in Self-Employment by N.W.T Residents 14 Years of Age and Over by Highest Grade Completed, Settlement, Ethnic Origin and Sex.
	Table 24	Rates of Participation by N.W.T. Residents 14 Years of Age and Over in the Labour Force by Settlement, Ethnic Origin, Age Group and Sex.

INCOME TABLES

✓ Table 25	Earnings from Wages and Salaries for All N.W.T. Residents 14 Years of Age and Over, by Settlement, Ethnic Origin, Age Group and Sex.
✓ Table 26	Earnings from Hunting, Trapping and Fishing for N.W.T. Residents 14 Years of Age and Over, by Settlement, Ethnic Origin, Age Group and Sex.
✓ Table 27	Earnings from Self-Employment for N.W.T. Residents 14 Years of Age and Over, by Settlement, Ethnic Origin, Age Group and Sex.
✓ Table 28	Total Earned Income from All Sources for N.W.T. Residents 14 Years of Age and Over, by Settlement, Ethnic Origin, Age Group and Sex.
Table 29	Total Unearned Income from all Sources for N.W.T. Residents 14 Years of Age and Over, by Settlement, Ethnic Origin, Age Group and Sex.
✓ Table 30	Total Income from All Sources for N.W.T. Residents 14 Years of Age and Over, by Settlement, Ethnic Origin, Age Group and Sex.
✓ Table 31	Earnings from Wages and Salaries for Members of the N.W.T. Labour Force, by Settlement, Ethnic Origin, Age Group and Sex.
✓ Table 32	Earnings from Hunting, Trapping and Fishing for Members of the N.W.T. Labour Force, by Settlement, Ethnic Origin, Age Group and Sex.
✓ Table 33	Earnings from Self-Employment for Members of the N.W.T. Labour Force, by Settlement, Ethnic Origin, Age Group and Sex.
✓ Table 34	Total Earned Income from All Sources for Members of the N.W.T. Labour Force, by Settlement, Ethnic Origin, Age Group and Sex.
Table 35	Total Unearned Income from All Sources for Members of the N.W.T. Labour Force, by Settlement, Ethnic Origin, Age Group and Sex.
✓ Table 36	Total Income from All Sources for Members of the N.W.T. Labour Force, by Settlement, Ethnic Origin, Age Group and Sex.

FAMILY INCOME TABLES

Table 37 Income from Wages and Salaries for N.W.T. Families, by Settlement and Ethnic Origin.

Table 38 Income from Hunting, Trapping and Fishing for N.W.T. Families, by Settlement and Ethnic Origin.

Table 39 Income from Self-Employment for N.W.T. Families, by Settlement and Ethnic Origin.

Table 40 Total Earned Income from All Sources for N.W.T. Families, by Settlement and Ethnic Origin.

Table 41 Total Unearned Income from All Sources for N.W.T. Families, by Settlement and Ethnic Origin.

✓ Table 42 Total Income from All Sources for N.W.T. Families, by Settlement and Ethnic Origin.

INCOME BY HIGHEST GRADE COMPLETED

Table 43 Income from Wages and Salaries for Members of the N.W.T. Labour Force by Highest Grade Completed, by Settlement and Ethnic Origin.

Table 44 Income from Hunting, Trapping and Fishing for Members of the N.W.T. Labour Force by Highest Grade Completed, by Settlement and Ethnic Origin.

Table 45 Income from Self-Employment for Members of the N.W.T. Labour Force by Highest Grade Completed, by Settlement and Ethnic Origin.

Table 46 Total Earned Income from All Sources for Members of the N.W.T. Labour Force by Highest Grade Completed, by Settlement and Ethnic Origin.

Table 47 Total Unearned Income from All Sources for Members of the N.W.T. Labour Force by Highest Grade Completed, Settlement and Ethnic Origin.

✓ Table 48 Total Income from All Sources for Members of the N.W.T. Labour Force by Highest Grade Completed, by Settlement and Ethnic Origin.

INCOME BY LANGUAGE ABILITY

Table 49 Income from Wages and Salaries for Members of the N.W.T. Labour Force by Languages Spoken, by Settlement and Ethnic Origin.

Table 50 Income from Hunting, Trapping and Fishing for Members of the N.W.T. Labour Force by Languages Spoken, by Settlement and Ethnic Origin.

Table 51 Income from Self-Employment for Members of the N.W.T. Labour Force by Languages Spoken, by Settlement and Ethnic Origin.

Table 52 Total Earned Income from All Sources for Members of the N.W.T. Labour Force by Languages Spoken, by Settlement and Ethnic Origin.

Table 53 Total Unearned Income from All Sources for Members of the N.W.T. Labour Force by Languages Spoken, by Settlement and Ethnic Origin.

✓ Table 54 Total Income from All Sources for Members of the N.W.T. Labour Force by Languages Spoken, by Settlement and Ethnic Origin.

AMOUNT OF WORK AND OCCUPATIONS

✓ Table 55 Number of Members of the N.W.T. Labour Force Who Worked Full-Time or Part-Time in Each Month, by Settlement, Ethnic Origin, Age Group and Sex.

✓ Table 56 Number of N.W.T. Residents 14 Years of Age and Over Who Worked Full-Time or Part-Time in Each Month, by Settlement, Ethnic Origin, Age Group and Sex.

✓ Table 57 Occupations held by N.W.T. Residents 14 Years of Age and Over, by Settlement and Ethnic Origin.

✓ Table 58 Number of Members of the N.W.T. Labour Force Without Work in a Selected Week, by Settlement and Ethnic Origin.

SETTLEMENT INCOME TABLES

✓ Table 59 Total Income from Wages and Salaries by Settlement in the N.W.T., by Ethnic Origin.

✓ Table 60 Total Income from Hunting, Trapping and Fishing by Settlement in the N.W.T., by Ethnic Origin.

✓ Table 61 Total Income from Self-Employment by Settlement in the N.W.T., by Ethnic Origin.

✓ Table 62 Total Income from Family Allowance by Settlement in the N.W.T., by Ethnic Origin.

Table 63 Total Income from Pensions by Settlement in the N.W.T. by Ethnic Origin.

Table 64 Total Income from Other Government Sources by Settlement in the N.W.T., by Ethnic Origin.

✓ Table 65 Total Earned Income from All Sources by Settlement in the N.W.T., by Ethnic Origin.

Table 66 Total Unearned Income from All Sources by Settlement in the N.W.T., by Ethnic Origin.

✓ Table 67 Total Income from All Sources by Settlement in the N.W.T., by Ethnic Origin.

FAMILY INCOME BY FAMILY SIZE

Table 68 Income from Wages and Salaries for N.W.T. Families with Children under 16 Years of Age by Number of Children, Income Group, Settlement and Ethnic Origin.

Table 69 Income from Hunting, Trapping and Fishing for N.W.T. Families with Children under 16 Years of Age by Number of Children, Income Group, Settlement and Ethnic Origin.

Table 70 Income from Self-Employment for N.W.T. Families with Children under 16 Years of Age by Number of Children, Income Group, Settlement and Ethnic Origin.

✓ Table 71 Total Earned Income from All Sources for N.W.T. Families with Children under 16 Years of Age by Number of Children, Income Group, Settlement and Ethnic Origin.

Table 72 Total Unearned Income from All Sources for N.W.T. Families with Children under 16 Years of Age by Number of Children, Income Group, Settlement and Ethnic Origin.

✓ Table 73 Total Income from All Sources for N.W.T. Families with Children under 16 Years of Age by Number of Children, Income Group, Settlement and Ethnic Origin.

APPENDIX B

Department of
Indian Affairs and
Northern Development

CANADA

Ministère des
Affaires indiennes et
du Nord canadien

165 Garry Street
Winnipeg, Manitoba
R3C 1G8

October 24, 1972

our file notre dossier 501/25-16 - Surv.
your file votre dossier

Mr.O.N. Zakreski,
Chief
Employment & Related Services
Department of Indian Affairs
and Northern Development
Ottawa, Ontario
K1A 0H4

Dear Mr. Zakreski:

Re: Manitoba Human Resource Survey

Please find attached correspondence on the above noted topic from the Lake Winnipeg, Churchill and Nelson Rivers Study Board directed to John Zyzneiwski.

At present it is expected that information from the Manitoba Survey will be made available to the Study Board.

The Study Board's present concern includes:

(a) permission to use the same survey forms for a survey of Metis people in a designated area. This portion of the survey would be paid for by the Study Board.

(b) provision under contract to the Study Board, use of Ottawa leased computer facilities, so that data from designated reserve communities and Metis communities can be integrated, meeting the needs of the Study Board.

For your information, the Study Board would like to survey an additional Metis population of 3,000.

I would suggest that consideration be given to having survey facilities made available to the Study Board. The information obtained from an integrated study would provide for necessary research on the implications of Manitoba Hydro's proposed development scheme as related to the northern reserve communities.

Yours truly,

for F. J. Foss
Regional Superintendent of
Vocational Education

JZ/sf

c.c. Mr. G. F. Taunton

October 13, 1972

Mr. J. Zyzneiwski,
Department of Indian Affairs,
and Northern Development,
165 Garry Street,
Winnipeg, Manitoba

Dear Mr. Zyzneiwski:

As you are probably aware, in September, 1971, Canada and the Province of Manitoba entered into a Study Agreement authorizing investigations to determine the effects Lake Winnipeg regulation, Churchill River diversion, and development of hydro-electric potential of the Churchill River Diversion route are likely to have on other water and related resource uses and to make recommendations for enhancing the overall benefits with due consideration for the protection of the environment.

The Lake Winnipeg, Churchill and Nelson Rivers Study Board, under whose auspices the Study is being conducted, has obtained the services of Acres Consulting Services Limited to undertake research upon request and advise the Study Board on the socio-economic implications of Manitoba Hydro's proposed development scheme. Acres is at present investigating the possibility of conducting a Human Resource Survey of Metis and other persons in certain northern communities, using a format identical to that developed by the Indian Affairs for its own purposes.

Acres Consulting Services Ltd. is interested in ascertaining whether — in view of the identical format — the Department of Indian Affairs and Northern Development would be prepared to assist in this Study by providing (under contract to the Study Board) computer facilities and existing programmes designed to process its own survey results. It is anticipated that two to three thousand additional surveys (coded by the Study Board) would need to be processed, should the Department of Indian Affairs and Northern Development concur with this request.

On a technical level, we would anticipate that the Department would encounter a number of problems in the processing of this additional data. The following are some problems which, in the opinion of Acres Consulting Services Ltd., would need to be overcome before processing could proceed satisfactorily:

cont'd...............

(1) assignment of a band code number to those registered Indians belonging to the York Factory band.

(2) assignment of a postal code number to those York Factory Indians resident at York Landing on the Nelson River

(3) given that present location of the population surveyed is specified only in Question #10 of the Human Resources Survey, design of a computer sub-routine (if necessary) to identify and to print-out detailed information on the following band segments:

South Indian Lake segment (postal code 0451) of the Nelson House band
- Granville Lake segment (postal code 0173) of the Pukatawagan band
- York Landing segment of the York Factory band.

(4) assignment of separate postal coding numbers for Metis and other people living outside of reservation boundaries, i.e. not in the original survey, as well as application of the computer sub-routine noted above.

(5) integration and print-out of data on additional population with data on original population, by location (if no computer programming required).

(6) assignment of postal codes for the following communities not part of Indian reservations:

- Wabowden
- Thicket Portage
- Pikwitonei
- Ilford
- Warren's Landing

cont'd.............

Some consideration is also being given to assembling and coding data on Thompson, Churchill, and Leaf Rapids. Again, a computer sub-routine similar to that noted in (3) above would be required to print-out by location.

(7) analysis of the feasibility of special (early) computer runs for band and/or communities of interest to the Study Board, with actual data keypunching and processing in either Ottawa or Winnipeg. Assuming a 70 per cent response to the survey, approximately 6,200 completed surveys would need to be processed.

(8) statement of expenses associated with design of necessary sub-routines, keypunching of data and operation of computer facilities.

Although acting on behalf of the Study Board, Acres Consulting Services Ltd. is not authorized to contract with the Department of Indian Affairs and Northern Development for these services. We would however, appreciate a statement from the Department on whether it is prepared to negotiate with the Study Board on this matter, and on what technical problems are likely to be encountered in processing of the data.

Yours truly,

ACRES CONSULTING SERVICES LTD.

G.F. Taunton,
Research Economist.

GFT/mk

APPENDIX 8 - VOL. 3 - G

SOCIAL IMPACT PROGRAM

SOCIAL IMPACT PROGRAM

by

NESBITT EDUCATIONAL ENTERPRISES LTD.
Winnipeg, Manitoba
January, 1973

for

THE LAKE WINNIPEG, CHURCHILL AND NELSON RIVERS STUDY BOARD

SPECIAL NOTE

THE CONCLUSIONS AND RECOMMENDATIONS CONTAINED IN THIS APPENDIX ARE THOSE OF THE AUTHOR(S) AND ARE NOT NECESSARILY THE SAME AS THE CONCLUSIONS AND RECOMMENDATIONS OF THE LAKE WINNIPEG, CHURCHILL AND NELSON RIVERS STUDY BOARD AS EXPRESSED IN THE SUMMARY REPORT AND THE TECHNICAL REPORT.

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1. INTRODUCTION

In August, 1971, a two-million dollar Agreement was signed between the Federal and Provincial Governments to study the effect of a proposed Manitoba Hydro power development on Lake Winnipeg and the Nelson and Churchill rivers. A study Board consisting of three Federal and three Provincial members are responsible for the Study. The purpose of the studies authorized under this Agreement is to

(1) determine the effects that regulation of Lake Winnipeg, diversion from the Churchill River and development of hydro electric potential of the Churchill diversion route would be likely to have on other water and related resource uses and

(2) to make recommendations for enhancing the overall benefits with due consideration for the protection of the environment.

The Study is to be completed by December 31, 1974, at which time a final report will be submitted to Manitoba Hydro and the Federal and Provincial Governments.

GENERAL

The Canada-Manitoba Agreement establishing the Lake Winnipeg, Churchill and Nelson Rivers Study clearly states the need to evaluate project impact and potential opportunities for the local people and communities of the northern Study region. On this matter, the Agreement emphasizes the need for basic social and economic analysis of demographic, employment and income impacts for the local people; in addition, interest is expressed in the impact upon local mobility, communications, trade, training and accessibility. The Agreement requires evaluation of the effects in both the short and long-term that result from construction and operation of the project.

Although not mentioned specifically as regards Social Implications, the Agreement in general requires an assessment of the net impact of the project (i.e. analysis of the situation both with and without the project). Furthermore, the Agreement requires that the final report include recommendations for such further measurements, sampling or investigations as may be desirable to provide at a later date an accurate record of the before and after effects of the works involved.

2. BACKGROUND

A. Acres Consulting Services Program

The Board contracted with Acres Consulting Services Ltd. to advise as to the requirements for social impact studies in accordance with the terms of the Study Agreement. Further, the scope and nature of social and economic analyses required by the study were to be described.

Acres Consulting Services made two important contributions to the study:

(1) Detailing the work requirements related to the socio-economic analysis based primarily on family income distribution (see sub-section 1. a, b, c and d below)

(2) Indicated that studies should be implemented to provide a long term monitoring program of life styles and cultural values of people in northern communities affected by Manitoba Hydro projects. Such studies would emphasize utilization of social indicators that are non family income distribution oriented. (see sub-section 2 below)

The objective of the social impact program is to display the hydro project's estimated net impact upon quality of life for people currently resident in northern Manitoba communities. "Quality of Life", of course, cannot be precisely defined or measured -- at best, it is only possible to quantify certain aspects which contribute toward overall quality of life (e.g. family incomes, spending patterns, jobs, housing quality, communication services, health and education services, etc.). It is not possible to combine various quantitative measures (e.g. incomes, housing quality, etc.) into some valid overall index of social impact - differing individual objectives, psychology, culture and perspectives prohibit such an approach.

The above considerations, combined with knowledge of the Study Agreement's overall objectives and research programme, led to recommendation of the following framework for the social impact program.

1. Socio-economic analysis - Family Income Distribution

(a) Quantitative Analysis Focused upon Family Income Impact:

Family income provides the best available general indicator of socio-economic quality of life impact. Income itself reflects employment opportunities, available skills, resource values, price levels, assistance policies, etc. The family represents an acceptable measure of consumption requirements, reflecting population trends and local cultural patterns.

(b) Breakdown of Family Income Impact by "Communities", "Income Sources", and "Major Occupations":

It is relevant to identify the extent to which particular communities are affected by the project. Furthermore, it is relevant to identify how specific groups are affected within each community -- particularly native groups who currently earn their living from traditional occupations (fishing, trapping, hunting), and who may experience significant changes in occupations. Breakdown of family income impacts by changes in sources of income for specific occupation groups within a community provides a quantitative basis for qualitative professional evaluation of likely transition and other social problems caused by change in traditional working patterns and way of life.

(c) Analysis of Annual Family Income Impact, 1972 - 1992

It is relevant to identify expected annual income changes during the short and medium-term (i.e. during the next ten year period, 1972 - 1982). The resource benefit cost analysis also provides a basis for judgements of likely family income impact in the longer term (e.g. 1987 and 1992 are selected as representative periods). Furthermore, it is considered that policy interest will tend to focus upon likely income estimates for specific years and time periods -- therefore discounted present value analysis is not proposed at this time.

(d) Family Income Analysis Includes Evaluation of Cost of Living Impact:

Experience suggests that a major hydro project, particularly during its construction phase, will have an impact upon the prices and types of goods and services purchased by the residents of the northern native communities. It is relevant to evaluate the project's impact upon local prices and to estimate family income changes in terms of constant 1972 dollars.

It is implied that the socio-economic framework discussed above would be focused upon quantitative evaluation of family income impact; this analysis implies integration of many specific socio-economic research tasks (e.g. population impact, resource employment impact by skill categories, price inflation impact, etc.). Throughout, this analysis would relate only to the effects of the project upon current local northern residents and likely future residents who would live in the communities if the hydro works were not constructed; employment and incomes for immigrants created by the project would not be included.

The above items have at this time received considerable attention, however, they would not constitute the entire socio-economic analysis; in addition, the following items require attention:

(e) Population:
Totals, age-sex distribution, cultural and language distribution, births, deaths and migrations.

(f) Labor Force:

Totals, age, sex, employment status, industry occupation distribution, seasonal employment patterns, skills, supply-demand trends.

2. Social Monitoring Program - Life Styles

It is relevant to provide a qualitative commentary and evaluation regarding the life styles of the people living in the various communities and an evaluation regarding the problems and potentials created by changed work patterns, training requirements, changing demand patterns, increased mobility, and decreased community isolation. In some instances, data and previous experience may permit quantitative evaluation; in many instances, however, only qualitative evaluation may be practical.

B. Nesbitt Educational Enterprises Program

The Members of the Study Board, the Technical Advisory Committee and the Study Director being engineers and biologists found it difficult to assess studies in the area of the social sciences.

Therefore Nesbitt Educational Enterprises was employed to assemble knowledgeable people in the area of the Social Sciences to:

1. Review the Acres proposal for social impact studies based on family income distribution.

2. Identify methods and programs to implement the recommendation of the Acres proposal for monitoring the life styles and cultural patterns of Northern native people.

The specific objectives were fivefold:

(1) To assemble federal, provincial and university staff to review the program of social impact studies proposed by Acres wherein attention is primarily focussed on social impact characteristics associated with family income distribution.

(2) To solicit suggestions concerning modifications, etc., to the social impact analyses proposed, within the time and budget constraints of the Study Agreement.

(3) To identify studies and/or programs that may be conducted within the framework of the Study that would serve to describe long-term changes to life styles and cultural patterns of communities to be directly affected by the Manitoba Hydro project. These studies would be of two types:

a. a base line study to determine the situation existing in the community at the present time.

b. a monitor program of actual impact: long-term impact as required in the Study Agreement. This program will include, where feasible, future investigations, sampling and analysis that would provide an accurate record of the effects of the project upon the groups and communities of the region. Such studies would presumably be academically oriented and would emphasize characteristics not directly associated with family income distribution.

(4) To provide an avenue for communication among individuals who have technical and/or professional competence in sociology and related fields and those directly associated with social development programs in northern Manitoba. Such communication would better enable the Board to (a) evaluate its current program for social impact analyses, (b) modify its social impact program to incorporate new Study proposals, and (c) relate the Study social studies to ongoing federal-provincial programs.

(5) To identify individuals who could, as members of a Social Impact Consultative Sub-committee, effectively advise the Board, Technical Advisory Committee and Study Director on social impact matters related to the Manitoba Hydro proposed project.

It is important to utilize the experience and practical perspective of government staff currently working with people living in the Study area; for this reason, a Social Studies Advisory Sub-Committee is proposed, consisting of experienced staff representing the many government agencies working on the employment and community development problems of the northern region. This committee will advise upon relevant communication and information programs as well as review and evaluate the research program, particularly those aspects of the research relevant for short-term policy recommendations.

3. METHODOLOGY

Nesbitt Enterprises,in fulfillment of its contract with the Study Board, held discussions with a number of interested, concerned and knowledgeable persons (see appendix page for list of people). A one day seminar was held to review subsection 1 of the Acres proposal,"a socio-economic analysis based on family income distribution"and to identify studies and/or programs which would fulfill subsection 2 of the Acres proposal "to identify and describe long term changes of life styles and cultural patterns of communities to be directly affected by the Manitoba Hydro Project".

4. DISCUSSION

The following material is a summary of the discussion at the seminar and with individuals.

1. Acres Proposals for Socio-economic Analysis based on Family Income Distribution

Considerable discussion took place, both at the seminar and in personal interviews, about the Acres proposals. There were no adverse comments about the proposals during the Seminar, nor in the private discussions. Since there was ample opportunity for the expression of criticism and since none was forthcoming we can assume that the Osler program is a good one. This contention is supported by comments from individuals during discussion. A program of this nature is a very necessary and integral part of any socio-economic study.

2. Social Monitoring Program - Life Styles

There was considerable discussion at the seminar about a program to monitor the life styles and cultural patterns of northern native people. The consensus of the group was that such a program is feasible, practical and necessary.

A suggested approach would be to have a competent person live in the community for 4 - 6 months to identify social indicators by which to describe and monitor changes in life style and cultural patterns of the community. The kinds of indicators would include attitudes to increased incomes, attitudes to increased numbers of people in the area, self-sufficiency of the community. (For further examples of the type of data, see page 17 Relevant Questions.) The person gathering the data would be under the direct supervision of competent research people. The importance of selecting competent people to gather the data was emphasized. If at all possible they should be native,Cree speaking people. The difficulties to be encountered in some of the communities (given the present negative attitudes of some of the people) was also emphasized.

Establishing the Purpose of the Study

Considerable discussion developed about the nature and purpose of the study; is the program purely for research purposes or is it to be action oriented?

Purpose may be visualized as running along a continuum thus*:

(1)	(2)	(3)
Data gathering for a data "bank". Emphasis on having info available for own use and distribution upon request. (Traditional research approach will suffice.)	Data to be gathered and analyzed for program development by an agency. Information put in digestible form and distributed to people and agencies concerned. (A traditional extension information approach.)	Data collected and analyzed in conjunction with the people concerned with a view to having them involved in goal setting, program planning and development, etc. (A developmental action-research model.)

Basic Research Approach	Action-Research Approach
1. Basically static -a process of data collection -study an end in itself -no follow up action necessarily contemplated by researcher -research proposal and design is restricted in purpose -there is only subject reaction e.g. to interview schedule.	1. Basically a dynamic approach -the gathering of data is a means to an end -study designed to be a stimulus -follow-up is deliberately planned -study population is the target population for development -encourages subject interaction - with researcher, with each other.
2. Usually limited to specific quantifiable variables -not comprehensive -will provide hard data that is measurable and subject to statistical analysis.	2. Study flexible enough to include all variables that will affect the action ultimately contemplated -potentially more comprehensive -some data will be of the "feeling" type and may not be as subject to statistical analysis.
3. Social and economic rarely integrated -the economic usually predominates -easier to quantify and measure economic implication -social indicators difficult to use - other than in a descriptive way	3. Social and economic and cultural etc., integrated into one approach.

---

* Personal correspondence, Mr. Al Murray, Department of Mines, Resources and Environmental Management.

4. Does not assume any responsibility for anything other than interview or data collection - information sharing primarily one way - researcher controls for bias.	4. There is a commitment to do something with data as it becomes available - analyzing data - searching for alternative development opportunities - planning - program implementation - problem solving - continuous learning

Considerable discussion developed about the involvement of the local people in the program. Local people will be asking, "why do you want the information?" "How will it be used?" The information will probably be more reliable if local people are involved in the data gatering process. There was some concern expressed as to whether native peoples would indeed participate in an action program. Cultural differences might preclude participation. It was suggested that if the program was functional the native people would participate.

The role of existing government staff (including Community Development offices) was discussed. They are in the communities now and aware of situations and relationships. Conversely the concern was expressed that government staff might not be able to get the subtlest of information from the people. Past associations with government might reduce the "trust" of the native people. The point was also stressed that certain information should not be revealed on an individual basis. A definite relationship (trust) must be established between the people and the researcher.

No attempt was made to reach a concensus on the type and purposes of the study. The decision as to who will do the study must obviously be made by the Board with the advice from the study director, the technical committee and the Social Impact Consultative Sub-Committee, (if and when it is established). The specific details of the study would be worked out by the Study Director and the Research person after consultation with the Board, the Technical Committee and the Social Impact Consultative Sub-Committee.

It was suggested that a combination of inputs would probably be best and that an integrated program with researchers and government staff working together in partnership would produce the best results.

Once base-line life styles and cultural patterns have been established - once we know what the situation is now - methods can be established to monitor the community life styles over an extended period of time, thus revealing the net impact of the Manitoba Hydro projects on Northern peoples.

It was emphasized that South Indian Lake, Cross Lake and the other communities involved have already changed over the past three years. We are not, therefore, establishing a bench mark as to what life styles existed before change took place. We are simply establishing what life styles exist at this stage in time.

General Discussion

The importance of maintaining a continuing communication with the native peoples was also stressed. It is important to know what the local people feel. It was indicated that local people, at the present time, are unaware of exactly what is likely to happen.

The view was expressed that there are dangers involved in making interim jobs (six months, one year, five years) available now and suddenly at some time in the future these jobs will disappear. Assurance was given that there will be continuing jobs with Hydro (construction) at various places in the North over the next twenty years.

It was suggested that "native" entrepreneurs should be encouraged. This would provide more employment opportunities for native people. This method has already been used by Manitoba Hydro.

One area of concern raised was the publication of the results of the research. This matter will have to be discussed specifically in detail with the individuals involved in the program. The specific situation as far as the Board was concerned was very clearly enunciated to the participants at the Seminar. Different individuals at the Seminar reacted in different ways. Many problems will be eliminated if agreement is clearly reached about publication rights before the project starts.

Concern was also raised about the efficacy of the study. Is there room to maneuver? Have all the decisions been made and the hydro programs will proceed regardless of the results of the study. (It was indicated at the Seminar that there is room to maneuver; e.g., the plants on the Burntwood River have been deferred until the study ends; fishways may be added when and where necessary; the flow rates on the Churchill River are adjustable).

Concern was also expressed that decisions had been made by Engineers and biologists used to operating in a precise, controlled,mechanical milieu without regard to thoughts or feelings of the hundreds of people in the northern communities whose "way of life" is at stake. This "way of life" has already been changed and will be changed even more in future years with resultant frustration, anxiety, alchololism, violence, V.D.

The question was raised whether it was worth taking the time to prepare submissions for a program of this nature since response to such programs on the part by government agencies had not been very fruitful.

It would appear that the seminar filled a useful purpose in bringing together social scientists, interested in native peoples in northern communities, representatives of government departments working in northern areas and representatives of the Study Board.

Interest was expressed by some of the people present in such research programs and it is assumed that submissions outlining possible projects will be forthcoming.

RECOMMENDED SOCIAL IMPACT CONSULTATIVE SUB-COMMITTEE

Given the terms of reference for the sub-committee (see p 5), it would appear that certain departments of government should be considered for inclusion on the sub-committee: These include:

1. Department of Northern Affairs
2. Department of Health and Social Development
3. Department of Mines, Resources and Environmental Management
4. Department of Indian Affairs and Northern Development

It would appear, further that certain branches within the various departments should be considered because of their specific interest and work with northern people. These would include:

1. Development and Extension Service Branch, Department of Mines and Resources
2. Northern Manpower Corps, Department of Northern Affairs

Given the terms of reference it would be advisable to include on the sub-committee university staff whose interests are in the areas of anthropology and sociology and who will probably be more competent to evaluate research proposals and to advise the Board on matters relating to the social impacts of Hydro Programs. The Department of Settlement Studies at the University is interested in programs of this type and should be considered for the sub-committee.

If at all possible within the above selection, it would be advisable to include some native peoples on the sub-committee.

With these criteria in mind I would recommend the following prospective members of the sub-committee. (A list of possible members from whom this group was selected will be found on page 16).

Mr. Phil Thompson, Assistant Deputy Minister, Department of Northern Affairs.

Mr. Larry Clark, Department of Northern Affairs

Mr. Ted Locke, Department of Health

Mr. W. Thomas, Regional Director, Department of Indian Affairs & Northern Development

Mr. Al Murray, Development and Extension Service Branch, Department of Mines, Resources and Environmental Management

Dr. Al Kristjannson, Department of Sociology, University of Manitoba

Dr. E.S. Burch, Department of Anthropology, University of Manitoba

Dr. A. Riffle, Centre for Settlement Studies, University of Manitoba

Prof. Bruce Sealey, Faculty of Education, University of Manitoba

Dr. E. Monu, Department of Anthropology, Brandon University

Native representation is provided by Messrs. Thompson, Thomas and Sealy. Dr. Monu provides a different native viewpoint, since he is from Africa. The prime reason for recommending him however, is that it would be valuable to have a representative from Brandon University on the sub-committee. There are a number of Northern Native students attending Brandon University and since it is small, there is a close relationship between staff and students. Because of this contact, staff are very much aware of situations in Northern communities and could provide valuable inputs to the sub-committee and the Board. Problems of accessibility are not as great as might be imagined since staff are back and forth to Winnipeg at frequent intervals.

A sub-committee of ten people may seem rather large, but given the terms of reference it is very difficult to settle for a smaller group.

APPENDIX

LAKE WINNIPEG, CHURCHILL AND NELSON RIVERS STUDY

SOCIAL IMPACT SEMINAR

Thursday, December 14, 1972
U.M.S.U. Council Chambers
University of Manitoba

AGENDA

9:25	Introduction. Ian Dickson
9:40	Description of Project. Mr. C. J. Goodwin
	Questions and Clarification
10:15	Coffee
10:30	Social Impact Program. Ian Dickson
11:25	" " " Cam Osler
11:50	Discussion
12:15	Lunch
1:30	General Discussion
3:25	Coffee
3:45	General Discussion
4:30	Adjourn

LAKE WINNIPEG, CHURCHILL AND NELSON RIVERS STUDY

SOCIAL IMPACT SEMINAR

Thursday, December 14, 1972
U.M.S.U. Council Chambers
University of Manitoba

Present:

Mr. Freeman Compton, Assistant Director, Development and Extension Service Branch, Department of Mines, Resources and Environmental Management

Mr. M. C. McKay, Provincial Manager, Special A.R.D.A., Department of Northern Affairs

Dr. D. A. Rokala, Department of Anthropology, University of Manitoba

Dr. W. W. Koolage, Department of Anthropology, University of Manitoba

Dr. J. S. Matthiason, Department of Anthropology, University of Manitoba

Dr. E. S. Burch, Department of Anthropology, University of Manitoba

Mr. C. F. Osler, Acres Consulting Services Limited, Winnipeg

Dr. T. Riffle, Centre for Settlement Studies, University of Manitoba

Dr. John Hamer, Department of Anthropology, Brandon University

Dr. E. Monu, Department of Anthropology, Brandon University

Mr. N. Mudry, Chairman, Lake Winnipeg, Churchill and Nelson Rivers Study Board

Mr. C. J. Goodwin, Director, System Planning Division, Manitoba Hydro

Mr. Neal Lachrin, Department of Northern Affairs

Miss Sue Morrison, Department of Northern Affairs

Mr. L. Whiting, Manitoba Hydro

Mr. Garry Dickson, Churchill Diversion, Archaelogical Project

DISCUSSIONS RE NELSON RIVER HYDRO PROJECT

In the course of this investigation, discussions were held with the following people about the Social Impact Study:

Dr. Oscar Mallory, Churchill Diversion Archaelogical Project, University of Winnipeg

Prof. Bruce Seely, Faculty of Education, University of Manitoba

Dr. E. S. Burch, Department of Anthropology, University of Manitoba

Dr. W. W. Koolage, Department of Anthropology, University of Manitoba

Dr. D. A. Rokala, Department of Anthropology, University of Manitoba

Dr. John Hamer, Department of Anthropology, Brandon University

Dr. E. Monu, Department of Anthropology, Brandon University

Dr. Sam Corrigan, Department of Anthropology, Brandon University

Mr. Larry Clark, Department of Northern Affairs

Mr. Al Murray, Development and Extension Service Branch, Department of Mines, Resources and Environmental Management

Mr. Freeman Compton, Assistant Director, Development and Extension Service Branch, Department of Mines, Resources and Environmental Management

POSSIBLE SUB-COMMITTEE MEMBERS:

Mr. F. Compton,	Department of Mines and Resources
Mr. J. MacKenzie	" " " "
Mr. A. S. Murray	" " " "
Dr. D.A. Rokala	Dept. of Anthropology, University of Manitoba
Dr. J.S. Mallhiasson	" " " "
Dr. A. Riffle	" " " "
Dr. A. Kristjanson	" " " "
Dr. E. S. Burch	" " " "
Dr. W. W. Koolage	" " " "
Dr. J. Hamer	Dept. of Anthropology, University of Brandon
Dr. E. Monu	" " " "
Dr. S. Corrigan	" " " "
Mr. P. Thompson	Department of Northern Affairs
Mr. W. Thomas	Department of Indian Affairs and Northern Development
Mr. L. Clarke	Department of Northern Affairs
Mr. N. Locke	Department of Health and Social Development
Dr. O. L. Mallory	University of Winnipeg
Prof. B. Sealey	Faculty of Education, University of Manitoba

RELEVANT QUESTIONS FOR SOCIAL MONITORING PROGRAM

SOME OF THE QUESTIONS WHICH SHOULD BE ASKED TO ESTABLISH THE NET IMPACT OF THE HYDRO DEVELOPMENTS ON THE LIFE STYLES AND CULTURAL PATTERNS OF THE PEOPLE PRESENTLY LIVING IN THE COMMUNITIES IN THE NORTH

---

1. What goods are presently produced and rendered in the community?
   What services are presently produced and rendered in the community?
   What services do people perform for each other?

2. How self-sufficient is the community?
   How self-sufficient are the people? In what respects?
    - What part of their diet comes from fishing and hunting?
    - What will happen when a great many people (tourists) invade the area?
    - Will resident fishermen continue to fish?
    - Will changes in stream flows and lake levels change fish habits?
      If so, will fishermen have difficulty in locating fish?

3. What is the ground water supply situation now?
   What effects will hydro projects have on ground water supplies?

4. What ability do they have to control their own affairs?
    - How do they go about it? e.g. band council
      dominant families?
    - What are the sources of conflicts in the community?
      How do they cope with conflicts?
    - How self-sufficient are they politically?
    - How do they get decisions made in the community?

5. What is the normal life cycle of the people in the community?
   infancy-youth-adult-old age
    - What is the every day way of living throughout a lifetime?
    - What are their expectations about the future?

6. What is their yearly cycle? Ceremonies? Holiday Seasons?
   Styles of living? Hunting in different seasons?
    - Do they tend to spread out at times and come back together at others?

7. What are their types of relationships? in family? between families?
   With whites? With Indian-Metis? Northern Indians-city Indians?
   People in the community-kids who have been out to school?
    - Where do they see their primary obligations?
      Husband-wife-brother-father?

8. Education:
   - Where do they get their informal education?
   - How do they learn what they need to know?
   - What will happen to these channels when roads are built and they have greater accessibility to the outside?

9. Leisure time:
   - How do they keep from getting bored--drinking, gambling?
   - What happens when their traditional mechanisms are interrupted?

10. What are their attitudes and values?
    - To an increased income? Where will they spend the money? Alcohol? Material things?--fishing equipment, guns, etc.
    - Sanitation--dumping refuse, etc.
    - What are the endemic diseases in the community - Hepatitis?
    - Welfare?
    - What is their reaction to sustained stress? Alcohol? Illegitimate children?
    - How do they view this project? What will happen to them? How can they take advantage of the situation? Fishing, tourism?
    - To strangers-with increased accessibility tourism will gradually develop.
    - How do they view violation of the reservations?

NOTE: FOR THE PURPOSES OF THE SOCIAL IMPACT SEMINAR AND THE LAKE WINNIPEG, CHURCHILL AND NELSON RIVERS STUDY, THESE QUESTIONS ARE ONLY RELEVANT AS THEY MAY BE RELATED TO THE PROPOSED MANITOBA HYDRO POWER DEVELOPMENT.

APPENDIX A

Department of
Indian Affairs and
Northern Development

CANADA

Ministère des
Affaires indiennes et
du Nord canadien

165 Garry Street,
Winnipeg,
Manitoba R3C 1G8.

22 August, 1972

Mr. G. F. Taunton,
Research Economist,
Acres Consulting Services Ltd.,
No.704 - 283 Portage Avenue,
Winnipeg 2,
Manitoba.

our file/notre dossier 506/25-16
your file/votre dossier

Dear Sir,

Re: Manitoba Indian Human Resource Survey.

Reference is being made to your request for information regarding the above noted Survey.

For your information please find attached copy of Introduction of Statistical Tabulations, produced from the Northwest Territories Manpower Survey. The Manitoba Survey will follow the same format, producing the same tabulations.

I am also enclosing three computer print-out tables as examples. Note that there will be a total of 73 computer print-outs tabulated from Survey information.

With regard to sorting routines, I would suggest that this is self explanatory in materials enclosed.

Note that the Introduction to the Statistical Tabulations Produced from the Northwest Territories Survey can appropriately read Manitoba Survey. Coding of communities - Manitoba Education Programs etc., were changed on Survey Questionnaire so that the Survey related to Manitoba.

Yours truly,

J. Zymneiwski,
Dist. Supv. of Adult Education.

JZ/im.

KEEWATIN MANPOWER SURVEY

TABLE 1

ESKIMO POPULATION OF THE KEEWATIN REGION OF THE NWT

BY SETTLEMENT AGE AND SEX JANUARY 1969

	AGE RANGE															
RACE	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-99	UNK	TOTAL
ESKIMO POINT	50	39	28	21	21	12	11	17	17	7	8	7	6	9	0	253
	1976	1542	1107	830	830	474	435	672	672	277	316	277	237	356	0	10000
WHALE COVE	24	19	9	6	6	2	4	5	4	4	2	1	2	1	0	89
	2697	2135	1011	674	674	225	449	562	449	449	225	112	225	112	0	10000
RANKIN INLET	53	44	22	22	21	18	14	8	7	5	8	5	2	1	0	230
	2304	1913	957	957	913	783	609	348	304	217	348	217	87	43	0	10000
CHESTERFIELD INLET	29	20	16	5	8	4	8	3	3	3	3	1	0	1	0	104
	2788	1923	1538	481	769	385	769	288	288	288	288	96	0	96	0	10000
CORAL HARBOUR	46	26	9	13	12	10	7	10	7	7	4	2	2	0	0	155
	2968	1677	581	839	774	645	452	645	452	452	258	129	129	0	0	10000
REPULSE BAY	19	21	14	8	10	8	3	4	5	3	1	2	3	1	0	102
	1863	2059	1373	784	980	784	294	392	490	294	98	196	294	98	0	10000
BAKER LAKE	67	62	35	22	28	19	15	15	15	7	5	8	5	5	0	308
	2175	2013	1136	714	909	617	487	487	487	227	162	260	162	162	0	10000
UNKNOWN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	288	231	133	97	106	73	62	62	58	36	31	26	20	18	0	1241
	2321	1861	1072	782	854	588	500	500	467	290	250	210	161	145	0	10000

KEEWATIN MANPOWER SURVEY

TABLE 3

MARITAL STATUS OF ESKIMO RESIDENS OF KEEWATIN REGION OF THE NWT

BY SETTLEMENT AGE AND SEX JANUARY 1969

ESKIMO POINT

MALE

	SINGLE	MARR	SEPAR	WIDOW	DIVOR	OTHER	UNK	TOTAL
AGE 0-4	50	0	0	0	0	0	0	50
	10000	0	0	0	0	0	0	10000
5-9	38	1	0	0	0	0	0	39
	9744	256	0	0	0	0	0	10000
10-14	28	0	0	0	0	0	0	28
	10000	0	0	0	0	0	0	10000
15-19	19	2	0	0	0	0	0	21
	9048	952	0	0	0	0	0	10000
20-24	4	17	0	0	0	0	0	21
	1905	8095	0	0	0	0	0	10000
25-29	2	10	0	0	0	0	0	12
	1667	8333	0	0	0	0	0	10000
30-34	0	11	0	0	0	0	0	11
	0	10000	0	0	0	0	0	10000
35-39	0	17	0	0	0	0	0	17
	0	10000	0	0	0	0	0	10000
40-44	0	17	0	0	0	0	0	17
	0	10000	0	0	0	0	0	10000
45-49	0	6	1	0	0	0	0	7
	0	8571	1429	0	0	0	0	10000
50-54	0	8	0	0	0	0	0	8
	0	10000	0	0	0	0	0	10000
55-59	0	7	0	0	0	0	0	7
	0	10000	0	0	0	0	0	10000
60-64	0	5	0	1	0	0	0	6
	0	8333	0	1667	0	0	0	10000
65-99	0	6	0	3	0	0	0	9
	0	6667	0	3333	0	0	0	10000
TOTAL	141	107	1	4	0	0	0	253

KEEWATIN MANPOWER SURVEY

TABLE 4

RELATIONSHIP TO HEAD OF HOUSEHOLD OF ESKIMO RESIDENTS OF THE KEEWATIN REGION OF THE NWT

BY SETTLEMENT AGE AND SEX JANUARY 1969

ESKIMO POINT

MALE

	HEAD	WIFE	SON	DAU	OTHER	UNK	TOTAL
AGE 0-4	0	0	43	0	7	0	50
	0	0	8600	0	1400	0	10000
5-9	0	0	32	0	7	0	39
	0	0	8205	0	1795	0	10000
10-14	0	0	22	0	6	0	28
	0	0	7857	0	2143	0	10000
15-19	3	0	16	0	2	0	21
	1429	0	7619	0	952	0	10000
20-24	18	0	3	0	0	0	21
	8571	0	1429	0	0	0	10000
25-29	11	0	0	0	1	0	12
	9167	0	0	0	833	0	10000
30-34	10	1	0	0	0	0	11
	9091	909	0	0	0	0	10000
35-39	17	0	0	0	0	0	17
	10000	0	0	0	0	0	10000
40-44	17	0	0	0	0	0	17
	10000	0	0	0	0	0	10000
45-49	7	0	0	0	0	0	7
	10000	0	0	0	0	0	10000
50-54	8	0	0	0	0	0	8
	10000	0	0	0	0	0	10000
55-59	7	0	0	0	0	0	7
	10000	0	0	0	0	0	10000
60-64	6	0	0	0	0	0	6
	10000	0	0	0	0	0	10000
65-99	8	0	0	0	1	0	9
	8889	0	0	0	1111	0	10000
TOTAL	112	1	116	0	24	0	253

APPENDIX 8 - VOL. 3 - H
LITERATURE REVIEW: SOCIO-ECONOMIC IMPACT
PERTAINING TO NATIVE PEOPLE

LITERATURE REVIEW: SOCIO-ECONOMIC IMPACT PERTAINING TO NATIVE PEOPLE

by

ACRES CONSULTING SERVICES LTD.
Winnipeg, Manitoba
February, 1973

for

THE LAKE WINNIPEG, CHURCHILL AND NELSON RIVERS STUDY BOARD

SPECIAL NOTE

THE CONCLUSIONS AND RECOMMENDATIONS CONTAINED IN THIS APPENDIX ARE THOSE OF THE AUTHOR(S) AND ARE NOT NECESSARILY THE SAME AS THE CONCLUSIONS AND RECOMMENDATIONS OF THE LAKE WINNIPEG, CHURCHILL AND NELSON RIVERS STUDY BOARD AS EXPRESSED IN THE SUMMARY REPORT AND THE TECHNICAL REPORT.

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Appendix A: Selected Bibliography

SUMMARY

This document reviews selected North American socio-economic impact literature pertaining to native people. Specifically, literature is reviewed dealing with:

1) Impact of relocating native communities
2) Impact caused by hydro and other water development projects
3) Impact caused by construction of pipelines and transport systems in northern areas.

This review as conducted for the Lake Winnipeg, Churchill and Nelson Rivers Study Board in order that the Study Board would be aware of current research techniques and analysis evaluating socio-economic impacts upon native northern communities. The Study Board is responsible for conducting socio-economic analysis evaluating the impact that specific Manitoba Hydro projects will have upon northern Manitoba native communities.

The following literature review underlines the consensus that northern native communities face major crises in adjustment during the next five to ten years, even without the added adjustment problems created by major new hydro, transport, or relocation projects. Adjustment problems result from the fact that the increase of native population, its changing demographic composition, its increasing demands for industrial goods and services etc., will be confronted by the relatively limited potential for expansion of the traditional hunting and fishing economy.

The Lake Winnipeg, Churchill and Nelson Rivers Study Board is examining hydro projects that would not require any community relocation, but could possibly affect traditional economic activities (e.g. hunting, fishing etc.) as well as generate major changes in short and long term wage employment.

Available relocation literature is not strictly relevant to the Study Board's problem. This literature, however, does provide the following guidance:

a) Communities usually suffer major problems after relocation -- however, these problems are not necessarily due to relocation, and would probably occur without relocation; relocation thus serves to aggravate, rather than create, problems -- with the possible exception of very isolated communities, where relocation can dangerously accelerate the rate of adjustment.

b) Analysis must evaluate effects upon economic activity, including the projected growth in potential native labour force, traditional native employment, and opportunities for new native wage employment

c) Severe problems have occurred even where communication, consultation, and some form of joint decision-making have taken place; communication and consultation per se do not remove the need for effective planning, combined with acknowledgement of the many unknown risks and human problems inherent in current native transition and adjustment.

Available literature concerning hydro and other water development projects is very relevant to the Study Board's problem.

In particular, the recent socio-economic analysis conducted for the James Bay hydro project by a team of anthropologists underlines the following:

a) The need to utilize cost/benefit analysis, regional economic planning analysis, and demographic projection analysis as the basic techniques for evaluation of socio-economic impact -- even with these techniques, there is great difficulty in determining the net effects of the project;

b) Within the socio-economic analysis, the need to examine the following:
    - different trends in subsistence versus wage economies
    - different population age, education groups within native community
    - critical importance of income in kind generated by subsistence activity (e.g. "income" from food that is obtained by hunting and fishing)
    - employment opportunities created by the project should be evaluated by major skill categories
    - multiplier employment opportunities, as well as direct employment opportunities, must be evaluated

c) An appropriate goal of this type of socio-economic analysis is to provide targets concerning long term planning of native manpower in order to move toward a viable and pleasant society after the project is constructed; a small proportion of direct construction jobs can be expected to go to natives -- the major new native job opportunities normally will be in the expanded non-project service sector; specific training and education programmes are required; concern must be directed toward assuring native involvement in the decision-making process, and in ownership and operation of service sector enterprises (e.g. tourism, housing construction, retail outlets etc.);

d) Regardless of the existence of a hydro project, basic problems exist for native communities as their economic base changes (e.g. problems associated with increased urbanization, increased contact with outsiders, increased desire and need for wage work, changes in school needs);

e) It is important to evaluate interaction within a project region between different types of towns, and between the towns and their hinterland -- the report comments at length upon the inadequacy of current planning which ignores native values and opportunities associated with urban development (e.g. the role of small marginal industries, shack towns, squatters etc.);

f) There is a need for communication and discussion with native communities; however, native communities are frequently dissatisfied with the type of information presented in socio-economic impact analysis -- this analysis is designed for planning purposes, and fails to provide the variety of specific details requested by native communities.

Available United States literature concerning the impact of water development projects upon native peoples emphasizes the standard practice of benefit/cost project evaluation of all direct and indirect costs incurred by native people as a result of a proposed project. This evaluation influences initial overall assessment of a project -- in this regard, recent benefit/cost literature outlines the need to assess the distribution of project costs and benefits as between affected groups. In addition, benefit/cost evaluation also plays a part in determining compensation for American native communities affected by water development projects; however, United States compensation awards also include major legislative awards for a variety of items included under the term "rehabilitation".

Available literature concerning northern pipeline and transport projects is also relevant to the Study Board, since this literature evaluates problems associated with the construction period as well as with overall adjustment necessitated by major projects. Canadian literature discusses impact problems created for specific communities (e.g. rising prices, need to plan business inventories, manpower problems, infrastructure problems, need for consolidated efforts by smaller local contractors, the value of detailed community manpower surveys etc.). United States literature dealing with Alaska pipeline and oil development focuses upon the problem of native land claims; however, this literature also tends to conclude that these developments are unlikely to have a major and beneficial impact upon native communities (e.g. these communities face problems created by unemployment due to existing seasonal industry, combined with a lack of education and skills demanded by modern industry -- oil and pipeline development by themselves are unlikely to alleviate these problems, and may well aggravate them).

In summary, this literature review outlines particular techniques and analysis relevant to the Study Board's programme. Available literature would appear to indicate the relevance and acceptability of the benefit/cost socio-economic family income study programme adopted by the Study Board in this area.

1. Introduction

As outlined in the Memorandum of Agreement dated September 8, 1972, between Dr. I. W. Dickson, Study Director, and C. F. Osler, Acres Consulting Services Ltd. has reviewed selected Northern American literature on the following topics of interest to the Lake Winnipeg, Churchill and Nelson Rivers Study Board:

- (a) evaluation of the socio-economic impact of relocation of native communities
- (b) evaluation of socio-economic impact on native communities due to hydro and other water development projects
- (c) review of current analysis and literature regarding likely socio-economic impact from construction of pipelines and transport systems in the northern parts of North America.

This literature review has involved an extensive search through existing bibliographic sources for reference material, as well as numerous requests to private and public agencies for publications. It must be stressed here, however, that time and budget limitations have prevented this report from being an exhaustive study of all North American literature on these three topics; many reports which appear to have relevance to this research process are not readily accessible to the consultant and hence have not been included here. Similarly, documents requested which have not yet been received (eg. United States Bureau of Indian Affairs publications) have been excluded from consideration.

2. Relocation of Native Communities Socio-Economic Impact

Relocation is often assumed to have devastating social and economic consequences on the residents of native communities. The ills which often emerge within these new native communities after their establishment are frequently ascribed to the serious adjustment problems faced by the inhabitants, in terms of economic activity and social interaction, as well as decision-making structures.

There have in the last two decades been numerous instances of relocation of Native communities. R. A. J. Phillips, for example, made mention of (a) certain Eskimos being moved by the Federal government from depleted game areas in Quebec and northern Baffin Island to Cornwallis and Ellesmere Islands in the mid-1950's (23, page 80), and (b) of other native people being relocated from the eastern Arctic to the shores of Hudson's Bay -- presumably to Rankin Inlet (23, page 174). Phillips did not, however, comment on the impact which this relocation has had on either group of people, both of which led essentially nomadic existences prior to that time. Similarly, the Federal Field Committee for Development Planning in Alaska, while noting in its 1968 report that 24 villages in Alaska were contemplating site relocation in 1966[1], did not comment directly on any problems faced by these natives through relocation (11, page 41).

---

[1] Although a declining resource base has often influenced relocation decisions, many villages have shifted sites to avoid the dangers of flooding or of other natural disasters. Thus, in 1968 the Eskimos of Kwigillingok were in the process of moving to a new site named Gongigonak, to escape late spring flooding.

Despite numerous relocations, therefore, the subject of socio-economic impact on native residents has not been extensively documented -- at least insofar as documents readily available to the consultant are concerned. For this reason, this section of the report will focus on three main relocation processes:

(1) establishment of Inuvik in the MacKenzie Delta by the Federal government, to replace the community of Aklavik

(2) relocation of the Churchill Chipewyan band

(3) resettlement of the Chemahawin band to Easterville, Manitoba.

Review of this literature would appear to suggest that serious problems of adjustment are being encountered in northern native communities -- problems which require initiatives on the part of both governments and the native people themselves. If the experience of Aklavik/Inuvik can be taken as any guide, however, these problems can not be attributed directly to the process of relocation -- except in the sense that relocation *per se* does serve to aggravate the fundamental difficulties facing northern native residents. Where, of course, a community is relatively isolated, relocation may be a much more harmful process; thus, the Van Ginkel study was likely correct in suggesting that social disruption in Easterville was to a large extent due to the end of physical isolation of the of the Chemahawin band -- in particular through increased access to automobiles and to liquor stores. (36, Volume II, page 59). Prior to flooding of their community, the Indians of the band had had relatively little contact with white culture, aside from the one white trader who owned the only store in Cedar Lake (36, Volume II, page 56).

Of far more relevance to the Study Board research programme is the Aklavik/Inuvik experience. In this instance, the impact on native people of creation of a major administrative center at Inuvik could be profitably contrasted with impacts occurring within the older community of Aklavik -- where the economy was based on fur trapping, but where frequent contact with white society was not unknown. In general, researchers who have examined both these communities in terms of social deviance patterns have commented on their similarities in terms of drinking offences, crime, gang warfare, welfare dependency and the reluctance of young adult natives to engage in economic activity (wage or other). Although the details will not be repeated here, the same disrupting influences appear to be at work in both Aklavik and Inuvik viz the doubts that many native people feel in adopting a white value system rather than clinging to their own and the frustrations that arise when native people recognize that they do not (in general) possess the means to achieve the goals and objectives that are implicit in the former value system (7, page 13). Clearly, much of the social deviance which has occurred in the two communities would have occurred even if Inuvik had not been established. This point is also made in a recent article by Peter Usher. (35, page 30).

It would of course be misleading to suggest that the establishment of Inuvik or of similar communities would not have had at least some impact on natives previously residing in other settlements. Thus, Clairmont cites the reluctance of many young natives living in Aklavik to move to Inuvik, because of the increased temptations for deviant behaviour in the latter location (6, page 56); "binges" in Inuvik by Aklavik youths are, for example, much more common than in Aklavik. The dangers of relocation with respect to economic activity, however, appear to be of far more importance -- notably in the traditional activities of hunting, fishing and trapping. Given that the location of Inuvik was probably determined without reference to the existence of fish and game, that community is probably somewhat unusual, but Salisbury *et al* have repeatedly made reference in their James Bay report to the adverse effects of increasing urbanization on trapping catches.[2] Hence, a danger does exist that any concentration of population as the result of a hydro or similar development project could have both direct and indirect effects on economic livelihood.

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[2] For convenience of exposition, the report on the social implications of the James Bay power project is discussed under impacts of water resource developments.

The danger, however, is not limited to traditional occupations; if natives are not able to function properly within an urban/industrial/wage environment, the opportunity to enjoy any benefits from such an environment are lost. Clearly, this has been the situation in Inuvik and similar communities, where transitory whites have often been predominate in higher wage and salary categories. Indeed, it is the basic premise of the Salisbury report that if indigenous residents are to have some control over planning and decision making processes, then they must have access to those job classifications where meaningful decisions are made (8, page 7).

2.1. Inuvik/Aklavik Community Structure

The creation of the town of Inuvik on the east channel of the MacKenzie River was in sharp contrast to the development/growth process usually experienceed by communities in northern Canada; Inuvik arose out of a conscious decision in 1952 by the Federal government to replace Aklavik -- a community 35 miles west of Inuvik by air, 70 miles by water (24, page 347) -- with a new, planned administrative center for the western Arctic. Given, moreover, that Inuvik was to be a model Arctic town offering residents of the area improved education, health and welfare facilities, the construction of Inuvik created for researchers a "social laboratory" within which to analyze the degree of adjustment made by native people to a new social, economic and community structure. Consequently, at least nine different reports or articles may be cited here concerning these two communities.

The older town of Aklavik enjoyed its most sustained period of growth and prosperity between 1919 and 1936, when Anglican and Roman Catholic missions, an R.C.M.P. detachment and a communications depot were established there. Indeed, Aklavik became the focal point of the entire MacKenzie Delta, attracting Eskimos from Alaska and the Arctic coast and Indians from the southern regions (6, page 1). The economy of the town was based primarily on a highly profitable trapping industry -- an industry, however, which is cyclically unstable and (apparently) secularly declining (10, page 20).

The declining fortunes of the trapping industry did not, however, provide the major impetus to construct Inuvik; rather, the decision of the Federal government to replace Aklavik appears to have been related primarily to the degree of flooding which the community experienced (24, page 346) and to the problems of silty permafrost, into which the town was literally sinking (6, page VII). Selection of the new site, however, also appears to have been based primarily on the same technological and engineering considerations (29, page 151); residents of the Delta were indignant over the fact that they had not been consulted during the site selection process, especially since the Inuvik location was far removed from adequate fish, game and fur resources. The location of Inuvik, therefore, created problems for the native people, since it forced them to depend for a living upon either wage labour or welfare assistance[3] (9, page 2).

As a consequence, despite an immediate decline in population of 35 per cent following completion of Inuvik in 1958-1959 (7, page 12) and a diverting of "rural" inhabitants (chiefly "bush" Eskimos) to the new site (6, page 1), Aklavik has not been abandoned entirely. Its economy, moreover, has remained essentially based on trapping, fishing and whaling -- although D. H. Clairmont cites evidence to indicate that the young native adults of the community lack the skills, the equipment and (most importantly) the inclination to engage in these activities. As a result, the only persons seriously involved in these traditional economic pursuits are "bush" Eskimos and a few permanent whites (6, page 12). Both Clairmont (6, pages 21-22) and Buckley et al (2, page 76) also make reference to a fur garment plant begun in Aklavik in 1959, which employs a number of women on a full-time basis.

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[3] Salisbury et al have also argued that the increasing urbanization of the North has an immediate, direct effect on traditional economic activity in a region: the increasing amount of time spent in cash income activities reduces the time available for subsistence activities, while the dangers of excessive hunting, trapping and/or fishing in the area adjacent to the population centers are increased (8, page 137).

The economy of Inuvik, on the other hand, has been characterized as highly artificial, being dependent upon government services and upon construction activities which are heavily underwritten from the south (9, page 2). The distribution of jobs in the community, moreover, among transient whites, permanent whites and the native population also appears to be structured along functional lines:

(1) transient whites tend to occupy positions of influence and of high salary within Federal government departments

(2) permanent whites are engaged primarily in either construction or in traditional economic activities

(3) native people (with few exceptions) tend to rely on wage employment for earned income -- wage employment which by and large is not permanent.

This pattern of job distribution is also reflected in the physical and social interaction among these three groups in Inuvik; Fried (13, pages 97-98) in 1963 made reference to the existence of three separate communities in Inuvik, one composed of government personnel housed in a special area serviced by a subsidized "utilidor" system, a second composed of independent whites, and a third composed of native people located at the opposite end of the community, either in houses of 512 sqare feet in area or in "tent town". As might be expected, social contact among these three groups (and especially between natives and whites) was therefore limited -- with the possible exception of fraternizing between transient single males and native girls (9, page 21).

To some extent, the passage of time seems to have blurred the image of the three separate communities in Inuvik. Indeed, in 1968, A. M. Ervin's thesis was that groupings in Inuvik were no longer based even on ethnic lines -- a new consciousness was emerging of the notherner (Indian, Eskimo, permanent white) versus the southerner, or of the long term resident versus the transient (9, page 5). Thus, continuing associations of Eskimos with Eskimos, Metis with Metis, Indians with Indians, and white northerners with white northerners appear to be based more on kinship or former place of residence than on ethnic/class distinctions.

Clearly, though, the native population of the Delta has had difficulty in adjusting to the type of wage economy and social environment characterized by economic activity in Inuvik. This difficulty has been reflected not only in high rates of unemployment and welfare dependency, but also in a high incidence of social disorder and deviance. Ervin suggests that, in particular, those native people whose values were formed in a bush milieu (i.e. those between 25 and 50 years of age) are having the greatest difficulty now in adjusting to the new environment -- where a growing dependency on relief payments has been accompanied by a loss of self-reliance, motivation and basic self-esteem. Ervin does not, however, discount the dangers of this situation with reference to their children, who are being exposed to both "bush" and white value systems without parental guidance and control (9, pages 8-10).[4] In these circumstances, as might be expected, there is a very high rate of social disorder, in terms of drinking, crime, gang warfare and the sexual exploitation of native girls by transient white males.

In conjunction with a higher rate of social disorder and lower economic status, native people have also not been very successful in influencing formal and informal political processes in the community. J. Mailhot, while observing 48 voluntary associations in Inuvik in her 1965 study, noted that many of these associations appear to reflect southern suburban preoccupations, by virtue of being dominated by small groups of individuals who seem to have nothing to share with the wider community (21, page 8). Indeed, many of the "native" organizations in Inuvik were under the threat of being taken over by the white population e.g. Inuvik Housing Co-operative (21, page 12). Consequently, voluntary organizations did not seem to be achieving much social integration between non-permanent whites and natives.

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[4] Traditionally, "bush" children are raised in a rather indulgent manner, since the harsh environment provides whatever discipline is required.

It would, however, be misleading to suggest that all the problems of adjustment facing native people in Inuvik could be traced directly to the new social and economic structure of the community. The literature on Aklavik/Inuvik clearly demonstrates that similar problems face both communities: non-participation in economic activity (wage or otherwise) by young native adults, welfare dependency, crime, gambling, gang hostility and of course drinking. In general, this pattern of behaviour may be ascribed to the frustrations that native people feel in adopting the white value system without possessing the means to achieve the goals and objectives that are implicit in this system (7, page 13).[5] Still, the reluctance of certain Aklavik natives to reside in Inuvik -- where opportunities for deviance are "greater" -- does suggest that the new community *per se* does have an impact on the problems faced by native people in adjusting to a new environment (6, page 56).

In closing, the following comment by Ervin would appear to summarize well the issue of impact of relocation of MacKenzie Delta natives (4, page 23):

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[5] The adoption of white middle-class values is, of course reflected in the present attitudes of the native population

> "Social change in the MacKenzie Delta has been largely directed, rather than undirected. This is so since the crucial and most obvious set of changes is focused around the construction of Inuvik, a planned town. Because of this, the native people of the Delta were exposed to a town setting, which thrives in the southern part of Canada. The evidence supports Fried's contentions that there has not been enough time for these natives either to assimilate successfully the behaviour patterns and values which are characteristic of Canadian town life, or to initiate the innovation of a new set of values to which they could more fully adapt and which would meet their own needs and wants."

2.2 Relocation of the Churchill Chipewyan Band

If terms of reference are interpreted strictly, the relocation of the Churchill Chipewyan band cannot be described as relocation of a native community to another site. The Churchill band was orginally composed of three semi-politically united bands (all of them nomadic) located around Caribou Post, North Knife River Village and North Knife Lake (36, page 45).

With the decline of the Caribou Post, the Indian Affairs Branch made arrangements in 1956 to move the Caribou Post band to the North Knife River. The group was, however, first transported to Churchill, where it quickly began to relocate to Ghotellay

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(5) towards girls with illegitimate children; whereas previously little social stigma was attached to this status, these girls are now subject to considerable ridicule and gossip in both Aklavik and Inuvik (9, page 19).

and Thuntonah, summer camps across the river from Churchill. When the area around North Knife River proved to be poor trapping, there was, understandably, considerable incentive for individuals and families to return to Churchill and to erect hovels on the fringe of that community in Ghotellay and Thuntonah or in Jackville. The migration was, however, not restricted to the members of the Caribou Post band.

Complaints from the local residents of Churchill over the condition of these hovels led the Indian Affairs Branch in 1958 to construct 20 homes for these people on land obtained from the provincial government. This action, however, seems to have prompted even greater migration from the North Knife River area to Churchill; again hovels were built on the fringe of the community and again pressure developed for Indian Affairs to construct additional housing facilities. This trend has apparently continued, such that by 1967 the North Knife River villages and the camps at Ghotellay and Thuntonah were almost deserted (36, page 47).

Unfortunately, the Van Ginkel study from which this summary was taken did not comment directly on the success that migrants might have had in obtaining employment at Churchill. One might advance the conclusion, however, that the Chipewyans were not very successful in obtaining employment on either a permanent or temporary basis.[6] It is clear, moreover, that to the extent that Indians were "pulled" to Churchill, it was by the prospect of better accommodation rather than employment per se (although of course the original migrants were more likely "pushed" to Churchill by declining fortunes in trapping). In abandoning traditional economic activity, however, the band found no improvement in their economic status in Churchill and sank deeper into welfare (36, page 48).

2.3 Resettlement of the Chemahawin Band

During 1957-1958, Manitoba Hydro conceived a power development plan at Grand Rapids which required the inundation of the reserve occupied by the Chemahawin band of Indians. Concern over the effects of relocation on the residents led the Government of Manitoba in 1960 to establish the Forebay Administration Committee to deal with their social and economic problems arising out of relocation(18, page 2).

Prior to 1960, the Chemahawin band had led a relatively isolated existence, with much of its economic activity confined to hunting, trapping and the preparation of food. There was little indication in the community at that time of any interest in independently owned enterprises; the one trader in the community was white and he dominated the economic life of the area (36, page 56).

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[6] Discussions with officials of the Indian Affairs Branch have indicated that approximately one half of the band have now left Churchill for the "bush".

The terms of reference of the Forebay Committee were quite wide and included commitments to the Chemahawin bands regarding site location, land acquisition and exchange, resettlement and economic development.[7] The issue of site selection was settled very early; the Forebay Committee presented the band with a choice of three sites and in 1961 the residents voted in favour of the site now known as Easterville, 32 miles south east of the original settlement (36, page 53). Similarly, extensive negotiations were conducted over time by the committee with the band regarding land acquisition and the resettlement process. Where the Forebay Committee probably fared badly was on the issue of economic development; both the 1967 Van Ginkel and 1968 Hedlin, Menzies reports on this topic suggested that the committee could have played a much more significant role in ensuring that the economy would have been as good as or better than at the community the Indians were leaving.

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[7] In practice, the Forebay Committee was often bypassed when major decisions were made.

The Forebay Committee had, with good intentions, established an Economic Liaison Committee to handle the problem of economic development at the new site. Unfortunately, this Liaison Committee had neither permanent members nor permanent staff and in the process of settling numerous but routine complaints, was never able to prepare a comprehensive report on the economic potential of the area (18, page 8). Little attention was paid, for example, to the education and skills of the band in other than traditional forms of employment; thus, while local labour was utilized in new house construction, no attempt was made to train the people on the job in any organized way (36, page 58).

Naturally, the Indians of the band were very concerned over what impact flooding would have on fish, game and other resources, especially the fish. Examination of records appears to indicate that changes in water level per se had little effect on total fish population, but did have an impact on fish species, favouring suckers over pike and pickeral.[8] Spring trapping in the Forebay area, on the other hand, was forecast to be adversely affected and arrangements were made by the Committee to improve other trapping areas, in particular the Summerberry River area. The 1968 Hedlin, Menzies report, however, speculated that only four or five people could adequately support families on the basis of trapping in the area (18, page 24), and hence, it could never be viewed as an activity to be relied upon to sustain a very large percentage of the community population.

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[8] The decrease in fish production after initial flooding in 1964 was associated with loss of nets and relocation to different areas. By 1966, fish catch was back to normal (18, page 11).

Some attention appears to have been paid during the existence of the Forebay Committee to potentials in forestry; the initial commitment by the Committee was to establish a forest management unit for the community of Easterville within provincial forestry management unit 47 (18, page 14). In November, 1967, a complete lumber operation was initiated at Denbeigh Point (about 18 miles from Easterville) under the sponsorship of the provincial government, in order to train people at Easterville in forestry operations and to observe their suitability and potential for such employment. A review of operations in June, 1968, however, suggested that the community was still not producing lumber economically (18, page 16), but that two outlets were open for continuing to utilize the skills acquired:

(1) logging of the area reserved for the people of Easterville in forest management unit 47; year round operations would entail cutting of approximately ½ million board feet and would generate employment of 12 to 14 men on a full-time basis.

(2) cutting of pulpwood for Churchill Forest Industries at The Pas; it was projected in 1968 that within five years 500 persons would be employed in cutting pulpwood in the area.

Notwithstanding these opportunities, by 1968 the situation at Easterville could only be described as grim. Even after assuming that only males between the ages of 16 and 64 years were actually in the labour force, Hedlin, Menzies calculated the unemployment rate in the community at over 50 per cent (18, page 30). Thus, while fishing was estimated to provide 24 jobs, forestry 14 jobs, casual labour 5 jobs and community services 5 jobs, there were still 52 unemployed males within the locale.[9]

Unfortunately, the failure of the Economic Liaison Committee to provide a comprehensive survey of the community and a plan for economic development prevented Hedlin, Menzies from indicating to what extent population, labour force and sector employment trends had been directly affected by the flooding at Chemahawin. It is interesting to note that even so basic a document as this was never prepared by the Forebay Committee, despite the intentions of all concerned that the community not suffer adversely from the relocation process. There is no evidence, moreover, that any such request ever emerged from the Indians and Metis at Cedar Lake; their concern was primarily with the short-run and concomitant effects on fish and other resources.

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[9] Officials of the Department of Indian Affairs and Northern Development have indicated that operations at the plant in Easterville have been suspended for approximately on year. No residents of Easterville are currently involved in logging operations for Churchill Forest Industries.

Clearly, though, the relocation of the community did have some serious social impacts. In discussing these impacts in a rather general manner, the Van Ginkel study made reference to (a) the end of physical isolation of the band (an all-weather road ultimately reached the community from the Grand Rapids highway), (b) the increased availability of liquor, (c) the introduction of new forms of economic activity (eg. co-ops), and (d) the emergence of new power structures as contributory factors to change in the social environment. These factors were, of course, above and beyond that of mere physical arrangement of the community (36, page 59). The difficulty here, however, is that the absence of necessary Forebay Committee economic planning documents does create the impression that all social and economic problems in the new community can be attributed directly to the Grand Rapids power project.

In conclusion, it must be noted that the Easterville experience included considerable communication and joint decisions by the people and the planners -- despite this process, the final situation was not satisfactory. These facts perhaps indicate the need for better or more thorough planning, plus greater acknowledgement of the unknown risks and human problems inherent in such transition situations.

3. Impact of Hydro and Other Water Resource Projects on Native People

Although the United States Bureau of Indian Affairs has apparently completed a large number of reports on the impact of water resource development on native people, none of these reports have as yet been received by the consultant and hence are not summarized in this section of the report. Consequently, only three reports are reviewed here:

- the social implications of the James Bay Power Development Project
- the Rampart Canyon Dam Project
- the Kinzua Dam Project.

The issue of the James Bay Power project is given considerable attention in this report, because in very large measure, this project is analagous to that proposed by Manitoba Hydro; hydro development would occur at a considerable distance from major urban (power consuming) centers, in a region where a high percentage of the population is composed of native people earning their livelihood from traditional economic activities. Given present education and skill levels of the native people, moreover, there is no guarantee that employment and income in traditional activity lost through hydro development will necessarily be replaced by hydro and related employment, on a band let alone individual basis. The Salisbury study, then, is conducted within many of the same constraints faced by the Study Board in its research programme.

There are, nevertheless, some major differences between the Salisbury report and the research programme envisioned by the Study Board for socio-economic evaluation of the project. In the first instance, the Salisbury report was completed within a period of approximately five months; this time constraint is very much reflected in the manner in which a research framework was evolved and in which data was handled (see Section 3.1 for elaboration). Secondly, the report was not part of an integrated research process; rather than working within parameters established by other resource studies, the Salisbury report attempted to derive its own estimates and openly disagreed with the findings of other reports eg. the Federal-Provincial Task Force on Ecology. Thirdly, the data base which the report utilized was clearly deficient to that which will hopefully be provided under an extended Indian Affairs Branch Human Resources Survey. Finally, the focus of impact analysis was not on a family/community basis, but rather on a broader regional basis -- no attempt was made to generate the detail envisioned in the Study Board programme.

In summarizing the basic concerns of the Salisbury report, it is important to recognize that the James Bay Hydro Development Project is assumed here to have a major impact on the urbanization process within the region, both in terms of (a) the rate of growth and (b) the functional relationships that exist between communities. As a consequence, the Salisbury report argues that reasonably clear development options exist for the natives -- either they can continue to operate in a traditional, subsistence economy without the project, or else they can attempt to accommodate themselves to an urban/industrial environment as represented by the James Bay power project.

The choice, however, as the Salisbury report has pointed out, will not be an easy one (8, page 6):

> "--- even if there is no power project, there is likely to be a crisis in Indian society in about five years. The increase of Indian population, its changing demographic composition, its increasing demands for manufactured goods and services --- will be confronted by the relatively limited potential for expansion of the hunting economy, which is now harvesting game at almost capacity."

In the view of the Salisbury report, the exercise of either option requires that the native people have an effective role in the decision making process (and to the extent that the latter option is chosen, that provision be made for Indian employment in both the construction and operating phases of the project). The report itself also makes a plea for "unplanned" development in the region, in order that Indians might realistically avail themselves of the indirect economic opportunities arising from the James Bay Power Development Project.

Implicitly, the Salisbury report is suggesting that many of the benefits and costs of an urban/industrial/white society can be weighed by natives of the region and choices made between this style of life and some other sytle of life, as represented by traditional pursuits and activities. In other words, it is assumed that the Indians of the region have had minimal exposure to white culture systems and, further, that mechanisms can be devised to modify these influences as required.

This point of view has obviously met with substantial agreement from Harvey Feit, an anthropologist from McGill University, who has argued recently that the indigenous population of the James Bay region continues to exercise a high degree of local autonomy over their affairs and activities, and that their participation in wage employment is on their own terms and in accordance with their own native culture and social values (12, pages 24-25). The image, then, is one of a relatively isolated but self-sufficient population which will be affected by a major hydro development project. The question for the Study Board research programme, however, is to what extent the same image is appropriate in northern Manitoba, where developments at such centers as Thompson, The Pas and Leaf Rapids can not be considered to have had the same effect as those at Chibougamau and Matagami, smaller centers which are located at the southern boundary of the James Bay region. Specifically, it is necessary to determine the validity of the argument put forward in the Underwood, McLellan report that general regional development processes are likely to have a greater impact on the future welfare of the communities than water resource development (31, page 78).

Notwithstanding the attention paid to the James Bay project, there are other water resource projects that have affected native people. The Rampart Canyon Dam project, for example, is perhaps the most significant hydro development project proposal ever to be rejected in North America. Indeed, the rejection by the United States Department of the Interior came only after numerous reports had been prepared and issued on the project. From the point of view of this paper, however, it is significant that the project was rejected almost solely on the basis of "hydro power economics" -- more precisely that the project would not attract major power intensive industries to Alaska and would not allow for export of power to the Pacific northwest states. Indeed it appears that the impact of the project on native people received only secondary (and possibly tertiary) attention in deliberations -- although it had been estimated that 1,200 Indians would be directly affected by the project, with a further 5,000 - 6,000 natives affected indirectly through reduced salmon and other runs.[10] Clearly, the concerns of the inhabitants of the region had only a residual or a peripheral influence on the overall decision.

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[10] Fish and wildlife losses however, did figure prominently in the decision to reject this proposal by the Army Corps of Engineers.

The Kinzua Dam project, on the other hand, represented the one instance where documents (United States House and Senate reports) were readily available on native compensation settlements arising from a water resource development project. The debate in both the House and Senate Committees during the 88th Congress over the extent of compensation provides some indication of the thorny issues which are often faced in deciding what effects can legitimately be considered to be the result of hydro development. In this instance, the Army Corps of Engineers argued that many of the proposals to "compensate" the Seneca nation for its loss were in fact unrelated to the Kinzua Dam project. In retrospect, the arguments of the Corps obviously influenced the Senate Committee, as it ultimately reduced the settlement awarded by the House of Representatives Committee from $20.2 million to $8.3 million.

Despite this reduction however, it is significant to note that those Indians residing on the Alleghany Reservation (the reservation actually affected by flooding) received over $2,250. per capita to compensate them for their loss, while other members of the Seneca nation received over $1,200. per capita. These sums represented payments for acquisition of easements, permanent improvements, oil and gas reserves, indirect damages, and most important of all, rehabilitation (training, upgrading and education).

The sum of $6.1 million for rehabilitation may seem somewhat surprising, especially since only eight jobs on the reservation were permanently displaced by the Kinzua Dam project. The settlement, however, was similar to that allocated earlier to Indians on essentially rural reservations in the Missouri River basin.

3.1 James Bay Power Development Project

In October, 1972, the James Bay Development Corporation issued a report prepared under its auspices by the Department of Sociology and Anthropology of McGill University, on the social implications of the James Bay hydro-electric power scheme. This report, completed in a period of approximately five months by a research team headed by R. F. Salisbury focused on the broader social impacts (employment, income, education and urbanization) of the proposed scheme, and commented on its relevance to residents of the region, especially native people. The report essentially functioned within a benefit/cost framework, attempting to identify trends in the subsistence and wage sectors of the regional economy with and without the project. The sections on education and urbanization sought to draw out some of the finer implications of the scheme in relation to over-all development goals; the study stressed that, in particular, the Cree Indians of the region must be involved in the long term planning process, in order to choose in a meaningful way what is to be their own future (8, page 7).

For the purposes of this summary, the study is divided into the following six topics, each of which will be disccused in turn:

- population
- the 1971 economy
- the 1971 economy projected without the James Bay project
- the 1971 economy projected with the James Bay project
- education
- urbanism

All discussion here will focus on the impact of the project on native peoples[11] (see also section 3.1.1).

Certain overall features of the report can specifically be noted:

(a) this study occurred some three to eight years before impacts would begin -- the objective was therefore to influence the initial planning process,

(b) the James Bay Development Corporation agreed that all findings should immediately be made available to the Indians of the area and to the wider Quebec public,

(c) the final section of the report reviewed Indian reactions to the interim report; this section stressed that detail (beyond that found in many initial planning studies) is essential in any communication of information to Indian communities; this section also reported on public meetings held with Indian representatives to discuss the report, and concluded that this report answered questions which were not yet relevant to the Indians (i.e. the process of communication was largely ineffective and far slower than anticipated).

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[11] The project as defined is the La Grande Project; no

(d) this study assumed a specific hydro project proposal and evaluated effects (situation with and without the project) over a ten year projection period; white and Indian sectors were treated separately, and within the Indian sector hunting/fishing and wage employment groups were separated; the study also evaluated recommendations to enhance benefits from the project to the region's people,

(e) the authors note that, as anthropologists, they faced an unusual problem of projecting or predicting effects; this study borrowed techniques from the fields of cost-benefit analysis, regional economic planning, and demographic projection analysis.

The authors provided the following conclusions regarding the situation facing the Indian people:

> "---even if there is no power project, there is likely to be a crisis in Indian society in about five years. The increase of Indian population, its changing demographic composition, its increasing demands for manufactured goods and the services associated with southern Canadian society, will be confronted by the relatively limited potential for expansion of the hunting economy which is now harvesting game at almost capacity" (8, page 6).
>
> "--- the sections of the present report dealing with the implications of hydro-electric development for the area should also be worth consideration for they point to problems and possible solutions to those problems that will emerge with any change in the economic base of the region -- problems of increasing urbanism, of increasing desire for wage work, of creating a school system geared to Indian needs, of increasing contact with outsiders." (8, page 7).

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account was taken of the possible diversion of the Kaniapiscau River which might involve effects on arctic char and salmon through lessened stream flows and the blocking of spawning areas (8, page 16).

3.1.1 Population

The Salisbury report estimated the 1970-1971 population of the James Bay region at 3,418 coastal and 2,534 inland registered Indians (obtained from Indian Affairs Branch band lists), as well as 17,752 whites. In focusing on the Indians, the report argued that population trends for white people in the region were very much subject to the rate of exploitation of primary resources such as minerals and timber; for this reason, the white population was considered to be transient, and hence no major demographic or economic analysis was conducted on this population segment (8, page 32).

Registered Indians, on the other hand, were assumed to be permanent residents of the region, with a very low incidence of migration from the reserves. Recent fertility and mortality rates[12] were therefore examined, and population projections to 1980 made for each Indian band, based on 5 year age-sex cohorts; by 1980, it was anticipated that 7,352 Indians will reside in the region, an increase of 27.4 per cent over 1971 (8, page 28). Those in the age group 20 - 35 years, moreover, will form 23 per cent of the total population, as compared to 20 per cent in 1971.

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[12] Within the last five years, fertility rates for Indian women between 20 and 45 years in the region appear to have been declining, to 4.0 births per 100 women. The latter rate was adopted in projections. Age specific death rates adopted were rounded to whole numbers and average for ten year cohorts (eg. two per thousand per year from age 1 to 29, four per thousand from 30 to 39, eight per

The report did evaluate labour force growth; however, the labour force definition adopted differs from that used in standard analysis. Normally, labour force includes only those people within a specified age group (eg. ages 15 - 64) who are willing and able to work. However, the Salisbury definition includes all people over 20 years of age. In this sense, the Salisbury definition is similar to the concept of "potential labour force" as noted in the Gemini North report on Settlement Council Labour Pools (15, Volume I, page 14); no upper age limit is adopted to reflect the fact that many native citizens continue in traditional activities until extreme old age.

In short, the report did not provide any estimates of existing participation rates (or, indeed, of the power project's impact on these rates) for either men or women.[13]

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thousand from 40 - 49, 20 per thousand from 50 - 59, 40 per thousand 60 - 69, 60 per thousand from 70 - 79, 100 per thousand from 80 - 84, and 200 per thousand over 85.

[13] The report did comment that few women presently enter wage employment.

Furthermore, the report broke down its labour force estimates by three distinct age groups based on linquistic-education characteristics:

(a) Those under 20: this group is still being educated; education is the norm rather than the exception in this group, as well as linguistic ability in English or French.

(b) Those young adults between 20 and 35: this group includes the educated and potentially wage-working labour force; the large majority have had at least a primary education; they can all read and write, and most speak English; however, the number with secondary education or beyond is very small.

(c) Those over 35: this group continues to work until extreme old age in traditional activities; many are literate, though almost exclusively in Cree Syllabic writing; only a small proportion speak English or French; very few have had extensive education.

The report emphasized that it is the young adult age group within which migration out is possible, in view of their education and abilities. The extent of actual migration is estimated to depend upon new employment opportunities, population growth in this age group, and death or retirement of older men working in trapping.

The report also noted that minimal out-migration would in turn have considerable impact on the local economy and society. New family formation would closely follow the pattern of demand for new jobs, creating rising demand for new houses. Similarly, estimates were provided of increased demand for classrooms, teachers and pupils.

The report presented estimates on the above items by projecting the current situation without the hydro project. Population changes produced by the hydro project were estimated to depend on employment impacts from the project -- these in turn depend upon the project's impact on traditional employment activities and on construction and other wage employment opportunities. The report emphasized that the extent to which Indians actually benefit from new wage employment opportunities will depend greatly upon education and training plans during the period.

Finally, the report also noted the large temporary population influx into the region during the construction period; however, only limited comment was made regarding the problems and impact on local residents created by this temporary influx.

3.1.2 The 1971 Economy

The Salisbury report, in analyzing the economy of the region, made a distinction between the hunting and trapping (or subsistence) way of life, and that way of life where income is based primarily on cash payments. The report also noted seasonal employment variations. In particular, the report commented on the high dependence of the Cree Indians on subsistence activities; in 1967 at Mistassini and Waswanipi, for example, 80 per cent of the labour force was involved in trapping for cash and subsistence during the winter, while only 20 per cent were employed exclusively in wage employment. During the summer of that year — the height of the wage employment season -- 20.8 per cent of the labour force worked all 15 weeks for wage employment. Indications are, moreover, that the situation has remained relatively constant since that time (8, page 39). The only major exceptions are, apparently, the Indians of the Abitibi-Dominion band, who are located close to urban centers along the rail line, and the Indians of Great Whale River, who are employed as stevedores.

The proportion of the adult male labour force engaged in hunting and trapping varies, however, from inland to coastal bands. Inland bands tend to have a higher percentage of the male labour force involved in this activity, with emphasis on the trapping of beavers. Seals, on the other hand, form an important part of the catch of the coastal bands. Cash income from hunting and trapping in 1970-1971 averaged $580. per hunter (full-time or part-time) for the inland bands, while trappers from the coastal bands realized and average of $430.

Of far more importance than cash income, however, is the income in kind generated by subsistence activity. The Salisbury report estimated, for example, that inland hunting groups derive 80 per cent of their winter diet from the land, while those in coastal regions derive approximately 50 per cent of their winter diet from hunting. After acknowledging that other food sources (geese, ducks, fish) are important in other seasons, the report estimated that an average family in the region -- by obtaining 55 per cent of its diet from bush food -- realizes income in kind of $3,513. per annum, assuming an imputed value for meat of $1.50 per pound, a typical hunting family of 3½ adult consumption units, three pounds of meat per adult consumption unit, and 50¢ per day for fuel for heating and cooking (8, pages 50 and 51).

The report commented only peripherally on the issue of fishing in the region, aside from suggesting that cash and income in kind generated directly from fishing probably exceed cash income derived by acting as guides for sports fishermen. The situation is, however, apparently reversed in the case of duck and goose hunting -- providing the Indians can capture the major portion of benefits from such a tourist activity (8, page 54).

Cash payments to Indians other than from hunting and trapping are categorized as (a) proceeds from wage employment and (b) transfer payments. Salisbury et al had no precise information on the extent of Indian wage employment in the region, and hence their estimates of income are most uncertain. By assuming, however, that less than one fifth of the labour force (say 200) is regularly employed at $4,000. per annum and that an additional 30 per cent or 375 persons work an average of 1½ months at $80. per week, total income from wage employment was estimated by Salisbury at $980,000.[14] Utilizing other assumptions, the report suggested an additional $682,500. was realized from transfer payments.

In summary, total 1971 income (cash and subsistence) to Indians in the region was estimated at $5,826,800., or $1,009 per capita and $5,297. per family. Furs provided 7.5 per cent of income, transfer payments 17.4 per cent, wage employment 25 per cent, while hunting for food provided 50 per cent of total cash and subsistence income. It was noted that figures for the percentage distribution of cash returns closely resembled figures for the percentage distribution of workers employed in the various sectors.

It could be concluded from the above that with existing wage rates and northern food prices, hunting and wage work are highly comparable in productivity (i.e. economically rational for good hunters to remain hunting and for poor hunters to take up wage work).

The report, however, notes that the extremely small cash incomes and the great dependence of the Indian economy on the terms of trade of manufactures against furs, on marginal wage employment, and on transfer payments make this a dangerous economic situation. Any further relative increase in demand for manufactured goods would make the hunting alternative unviable; furthermore, a vicious circle can start as hunting declines slightly (eg. major reduction in trading post services to trappers etc.), driving Indians into an even greater dependence on wages and transfer payments (8, pages 55-59).

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[14] A large proportion of the jobs are provided on Indian Affairs Branch sponsored projects.

As regards the white population, the report noted that most white towns and settlements were enclaves having little relationship with the local environment or society, beyond the work performed for a government or company. Economically, most of these settlements were described as outposts of the southern economy (eg. the large sums of money entering these communities multiply very little and create few added jobs locally before they flow south to pay for imports).

3.1.3 The 1971 Economy Projected Without the James Bay Project

The distinction employed between the subsistence and cash economics was also utilized by Salisbury in projecting the 1971 economy without the James Bay project.

With reference to hunting and trapping, the report concluded that employment will probably not increase, and indeed could begin to decline sharply in the south within the next five years — primarily as the result of declining labour productivity in hunting and overtrapping without rotation in areas close to major settlements. About 15 per cent of available hunting territories will, moreover, not be taken up, given their distance from coastal settlements, increased movement to major settlements, and the decline of the hunting economy infrastructure, i.e. the Hudson's Bay trading post. No precise estimates on employment declines (or indeed income effects) were, however, provided in the report (8, pages 66-68). It was concluded that the effects of inflation and increasing general wage rates would in themselves have only a small effect on the attractiveness of hunting.

A similar reluctance applied with respect to the provision of employment and income estimates on activities occurring within the cash economy. The report argued that primary resource activity (forestry and mining) is unlikely to generate major increases in employment for Indians within the region. Tourism and the service industries, on the other hand, were identified as major likely growth points. Development will, however, depend as much on the increased use of local employment and local materials as on increased tourism and service activities within the region. Aside from commenting on the present minor impact of tourism in the region and on the likely concentration of service activity within Chibougamau and Matagami, the Salisbury report did not, however, document the resulting employment and income impacts without the James Bay project (8, pages 69-70).

3.1.4 The 1971 Economy Projected with the James Bay Project

In terms of the subsistence economy, Salisbury focused on the economic effects of dam building and inundation of territory with respect to two animals -- beaver and migratory fish. At this juncture, the Salisbury report differed from the earlier Task Force report on ecology, by suggesting that the James Bay project will, by virtue of shifting water levels, have a catastrophic effect on the beaver population in the region. Indeed, beaver will not be able to occupy tunnels on the banks of lakes or rivers (rather than lodges) since the project will likely raise water levels out of the zone in which steep sandy or earthen banks exist. From an economic standpoint, the effects would, moreover, be cumulative; a reduction by 25 per cent in the beaver catch would probably be sufficient (given the current relative attractiveness of hunting) to make hunting and trapping no longer viable in a particular territory (8, pages 74-75).

The report did not attempt to provide precise estimates of the impact of the project on the beaver population, and hence on the Indian economy. Rather, the hunting territories most likely to be affected by the northern La Grande River project were identified, and the 72 trappers in these areas assumed to lose their livelihood and subsistence when flooding occurs in 1977. This loss of territories could remove one ninth of the coastal bands' total food supply. No direct estimates of income loss, were, however, provided (8, page 76).

A similar level of analysis was conducted on the effect of dam construction on the migration of fish such as salmon, white fish and char. Basing its estimates more on inference than on observation, the report concluded that the loss of fish as the result of the James Bay project might approximate one third of the whole population's food supply if fish ladders proved ineffective (8, page 77).

Having analyzed possible losses in the subsistence economy, the report proceeded to evaluation of the opportunities for Indians to benefit from the James Bay project in the wage sector. Here, the report specified three types of impact: (1) direct employment impact in construction and operating phases, (2) multiplier employment impacts and (3) indirect impacts, which are defined as those effects felt in all sectors of the economy as the economy itself accelerates.[15]

In analyzing direct employment opportunities for native people on site, Salisbury et al utilized four categories of employment:

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[15] No calculations were provided on this latter effect.

1. Category I - professional and administrative staff occupations eg. engineers and researchers
2. Category II - trade occupations involving high technical training and experience eg. electricians and plumbers
3. Category III - semi-skilled occupations eg. equipment operators
4. Cateogry IV - unskilled occupations eg. labourers.

Projected construction employment on the basis of these categories (by year) are noted in Table I attached; it is estimated that 73,270 man-years of employment will be created 1972-1983, with a peak of 11,250 man-years achieved in 1977. Direct payrolls generated on site will approximate 1.2 billion dollars by 1983, (see Table 2). On average, about 25 per cent of the jobs in any year would be in Category I and about 40 per cent in Category IV.

Salisbury *et al* have obviously had access to very limited information on Indian skills and education -- information which would be necessary before any precise estimates of employment potential (at least in the short run) could be developed. The report at this stage estimated labour force to include all *males* between ages 16 and 64, excluding 55 per cent of the children in the 16-20 age group who were assumed to be attending school. In total, this male labour force was 1,250 in 1970, and represented 22 per cent of the area's Indian population.

TABLE I

Projected Construction Employment in the Revised James Bay Development

1972-1978

	1972	1973	1974	1975	1976	1977	1978
Category I							
Administrators, managers, engineers,, supervisors, research	475	1190	2025	2050	2300	3050	3000
Less: employed off site	245	325	425	550	600	700	625
Total on site	230	865	1600	1500	1700	2350	2375
Category II							
Mechanics	200	300	400	300	300	575	525
Electricians	50	125	275	250	300	300	225
Plumbers	40	175	175	150	150	250	125
Rodmen, etc.	-	25	100	75	75	125	100
Total	290	625	950	775	825	1250	975
Category III							
Carpenters	200	325	700	500	525	1075	1025
Tractor operators,etc.	240	410	550	350	300	475	450
Truck and equipment drivers	275	450	850	575	575	1050	975
Total	715	1185	2100	1425	1400	2600	2450
Category IV							
Kitchen staff	100	250	350	325	350	500	475
Day labour	375	2000	3300	2075	2250	3700	3125
Miscellaneous	200	650	650	600	525	850	825
Total	675	2900	4300	3000	3125	5050	4425
Total on site	1910	5575	8950	6700	7050	11250	10225
plus off site	245	325	425	550	600	700	625
Total Employment	2155	5900	9375	7250	7650	11950	10850

TABLE I (CONT'D)

Projected Construction Employment in the Revised James Bay Development

1979-1983

	1979	1980	1981	1982	1983	Total in Man years
Category I						
Administrators, managers, engineers, supervisors, research	2775	2200	1425	475	50	21,015
Less: employed off site	475	200	125	75	40	4,380
Total on site	2300	2000	1300	400	10	16,630
Category II						
Mechanics	500	275	200	75	10	3,660
Electricians	200	150	125	50	10	2,060
Plumbers	150	100	100	50	10	1,475
Rodmen, etc.	75	75	50	25	-	725
Total	925	600	475	200	30	7,920
Category III						
Carpenters	825	425	275	100	25	6,000
Tractor Operators, etc.	425	300	225	75	10	3,810
Truck and equipment drivers	825	300	200	100	10	6,185
Total	2075	1025	700	275	45	15,995
Category IV						
Kitchen staff	425	275	200	100	5	3,355
Day labour	2700	1800	1100	450	60	22,935
Miscellaneous	725	575	425	400	10	6,435
Total	3850	2650	1725	950	75	32,725
Total on site	9150	6275	4200	1825	160	73,270
Plus off site	475	200	125	75	40	4,385
Total Employment	9625	6475	4325	1900	200	77,655

Source: Development and James Bay: Social Implications of the proposals for the Hydro-electric Scheme McGill University (Montreal:1972) Department of Sociology and Anthropology.

TABLE 2

Estimated Payrolls on site (1972-83) from the Construction of the James Bay Project Assuming that it Starts in 1972
(in $000,000s)

Year	Category				Total*
	I	II	III	IV	
1972	4.22	5.48	8.50	6.22	24.42
1973	16.52	12.79	14.65	29.79	73.75
1974	31.79	19.77	26.99	46.18	124.73
1975	31.00	17.38	19.03	32.42	99.83
1976	36.52	19.30	19.44	34.97	110.23
1977	52.49	29.90	37.54	59.61	179.54
1978	55.18	25.75	36.80	53.80	171.53
1979	55.55	24.93	32.41	48.49	161.38
1980	50.25	16.81	16.69	43.96	118.71
1981	33.97	13.48	11.82	23.35	82.62
1982	10.87	6.23	4.83	13.53	35.46
1983	.28	.76	.82	1.16	3.02
Mill. $ Total	378.64	192.58	229.52	384.48	1,185.22

* Total payroll excludes payments made to people not based on site, and assumes all payments to labour employed on site will in fact be made on site (and thus form part of the regional incomes). Payroll includes average pay rates in the industry, with adjustments for overtime pay, fringe benefits and annual wage escalations (4 per cent per year assumed).

Source: Development and James Bay: Social Implications of the proposals for the Hydro-electric Scheme McGill University (Montreal: 1972) Department of Sociology and Anthropology

The report proceeded to hypothesize that, as a minimum estimate, only 20 per cent of the male Indian labour force would initially be involved in the project; furthermore, all of these would be employed initially only in the Category IV level. This proportion could rise to 30 per cent in 1975 and 40 per cent in 1980 (at which time one half would be employed in Category IV and the remainder in Category III). Thus, by 1980, this hypothesis indicated 670 Indians would be employed in the project.

The report also evaluated an hypothesized maximum Indian involvement which assumed that half of all the employable males would seek jobs right from the start of the project, with half of this group being in Category III and half in Category IV. On this basis, it was assumed that total involvement would increase to 65 per cent of the male Indian labour force in 1980 (one third in Categories I and II, one third in Category III, and only one third in Category IV). This hypothesis in effect assumed that some part-time hunters would leave the hunting and trapping economy even at the start of the project.

Under either of the above hypotheses, the report noted that the proportion of Indians employed relative to total project employment would actually decline between 1972 and 1980 (from 14 per cent to 3 per cent under the minimum involvement hypothesis, and from 34 per cent to 12 per cent under the maximum involvement hypothesis). This analysis indicated the extent to which temporary labour migration into the area would be required during the construction phase -- this, in turn, indicated the extent to which project labour incomes would tend to leave the area (eg. in the form of savings, remittances to families etc.), reducing the project's overall multiplier impact upon local residences.

The report assumed a local income multiplier (applied to on site payroll) of 1.2; this multiplier was based upon judgement rather than direct estimates, and assumed an import leakage of 80 per cent. The local multiplier of 1.2 can be compared with a multiplier of 1.4 (estimated in other reports) for the project's total impact on the economy of Quebec. In total, the report estimated multiplier effects by year during the construction period; estimates indicated that maximum multiplier effects would occur in 1979 (some 2,200 new local jobs), and would taper off rapidly thereafter.

Considering the lack of developed service and supply infrastructure in the region (as well as the number of temporary migrants into the region during construction), the local multiplier assumed in the report appears to be high. An earlier report, for example, estimated an investment income multiplier value of 1.45 for the impact of mineral development at Thompson, Manitoba -- however, this was achieved only after the mine was in full operation and the town's population was at least 13,500; in earlier years, multiplier values substantially below 1.0 were estimated for employment impacts (19, page 167). It would be useful to evaluate more directly the factors likely to create the local James Bay multiplier; furthermore, it should be noted that the value of the multiplier can change depending upon the base against which it is applied (eg. employment, wages, investment, etc.).

The Salisbury report did recognize that direct permanent employment impacts in the operating phase are also of considerable importance in evaluating the project; such jobs are likely to be limited in number and of a specialized nature. The report noted that project consultants had already estimated permanent employment from the hydro scheme at 600 jobs for both complexes (or 400 jobs for one complex), plus 15 - 20 jobs for maintenance of road and other services and 15 - 20 jobs for ecological control and related functions. The Salisbury report further suggested that as a target, 285 of these jobs (in Categories I and II) should be held by Indians in 1981, either through promotions or as the result of formal education and training processes. Reference to Table 3 attached should indicate that achievement of such a goal implies a major, but gradual increase in the qualifications of Indian workers; in 1972, it is assumed that there is no "stock" Indian employment in either Category I or Category II occupations.

TABLE 3

Sample Manpower Estimates to Reach a 1981 Target Distribution of Indian Workers

		1972	1973	1974	1975	1976
Category I	Stock	-	5	15	25	35
	New	-	5	5	6	7
	Prom.	5	5	5	4	3
Category II	Stock	-	5	25	55	80
	New	-	10	10	10	10
	Prom.	5	10	20	15	15
Cateogry III	Stock	100	120	135	170	190
	New	5	5	10	10	10
	Prom.	15	10	25	10	10
Service and White Collar	Stock	30	45	60	95	130
	New	20	20	20	19	18
	Prom.	-5	-5	15	16	17
Hunters	Stock	600	590	580	570	560
	New	12	12	12	12	12
	Retire	-22	-22	-22	-22	-22
Unskilled Non-Project	Stock	300	300	285	275	265
	New	20	5	-	-	17
	Prom.	-20	-20	-10	-10	-10
Unskilled Category IV	Stock	285	285	285	230	195
	Prom.	-	-	-55	-35	-35
Total Work Force	Stock	1315	1350	1385	1420	1455
	New	57	57	57	57	74
	Retire	-22	-22	-22	-22	-22

TABLE 3 (CONT'D)

		1977	1978	1979	1980	1981
Category I	Stock	45	55	65	75	85
	New	8	9	10	10	
	Prom.	2	1	-	-	
Category II	Stock	105	130	155	180	200
	New	10	10	10	10	
	Prom.	15	15	15	10	
Category III	Stock	210	230	250	275	300
	New	10	10	10	10	
	Prom.	10	10	10	10	
Service and White Collar	Stock	165	200	235	270	305
	New	17	16	15	15	
	Prom.	18	19	20	20	
Hunters	Stock	550	540	530	530	530
	New	12	12	22	22	
	Retire	-22	-22	-22	-22	
Unskilled Non-Project	Stock	272	279	286	290	300
	New	17	17	7	7	
	Prom.	-10	-10	-3	3	
Unskilled Category IV	Stock	160	127	96	62	15
	Prom.	-33	-31	-34	-47	
Total Work Force		1507	1561	1617	1675	1735
	New	76	78	80	82	
	Retire	-22	-22	-22	-22	

Note: "Stock" refers to the total number of individuals in the category at the beginning of the year.
"New" refers to additions to the labour force who join that category (i.e. school and university leavers)
"Prom." refers to promotions or people entering (leaving) one category from (or for) another.

Source: Development and James Bay: Social Implications of the proposals for the Hydro-electric Scheme McGill University (Montreal: 1972) Department of Sociology and Anthropology

In relation to long term labour force growth, however, the Salisbury report did not expect that direct permanent employment arising from the project will be sufficient to absorb all Indians desiring work in the region -- especially since trapping and hunting employment is anticipated to decline from 600 jobs in 1972 to 530 jobs in 1981. Great reliance has, therefore, been placed upon the multiplier process to generate unskilled and service jobs in the non-project service sector sufficient to employ about one third of those Indians leaving school; this sector must provide work for Indians who (a) might be involved temporarily as Category IV workers on the James Bay project and/or (b) might enter the labour force after 1972. In particular, tourism activities and housing construction (as well as retail and government functions) were cited as holding considerable promise for employment creation over the next decade (8, pages 100 - 103).

In summary, the report sets targets for long term planning of Indian manpower that would provide a viable and pleasant society after the hydro construction period has ended. To achieve such manpower targets, the most critical action would be expansion of the non-project service sector; next most critical could be necessary training programmes to upgrade Indian workers in all categories throughout the construction period; third most critical would be the need for a rising number of each year's school class to obtain professional, technical or supervisory skills from higher educational institutions. Finally, it would also be necessary to have a steady replacement of older men who retire from hunting by younger men.

The report concludes that there is little question that the multiplier effects could be created sufficient to achieve the target objectives, and a viable economy emerge in the north, based on Indians hunting, operating (in part) the hydro-electric scheme, providing their own services, having some employment in white mining and forestry industries, and operating almost exclusively the tourist industry. (This conclusion would be questioned if the assumed local multiplier is indeed too high.) The report emphasizes, however, that policy action must also be taken in training, hiring, and other support areas in order to achieve targets.

3.1.5 Education

In general, the major arguments advanced by Salisbury _et al_ in the field of education are related less to the James Bay project _per se_ than to the broader implications of Indians adapting to an education system defined almost exclusively by whites. For this reason, much of the discussion here on education can be omitted in this summary; perhaps the only crucial variable identified with reference to the James Bay project is the provision of pre-professional training for Indians who are to become managers and administrators. On this issue, the report recommends short seminars conducted by an Indian organization to upgrade the skills of existing administrators or to prepare for administrative careers well qualified Indians who to date have functioned outside their own society (8, page 117).

3.1.6 Urbanism

Perhaps reflecting their own concern over the deleterious effects of urbanization on the Indian population, the Salisbury team has devoted approximately 30 per cent of its entire report to the subject of urbanism. This concern is prompted by (a) the likely impact of the James Bay project on existing communities such as Chibougamau and by (b) the possible construction of a new town in the region, as the result of an influx of 12,500 to 56,500 new residents during the construction phase (8, page 146).

The report distinguished three types of centers in the region: administrative centers, industrial centers and serviced rural centers.

Administrative centers are characterized in the report by their predominantly native population and by the size and concentration of this population in a densely-settled, semi-sedentary to sedentary community; generally, the population is too large for effective subsistence activities in the vicinity -- yet a large proportion of the population may be engaged in part-time or sporadic subsistence activity. Overhunting tends to occur in the territory around such settlements; native hunters able to afford higher transportation costs to more distant and productive sites tend to be favoured. Such settlements are also frequently too large to be effectively integrated by traditional structures, causing structural disintegration into competing segments rather than organization into one cohesive community.

Industrial centers are characterized in the report as large in population, complex socially, and associated with increased job opportunities and increased need for social assistance; at the same time, these communities pose problems in the area of interethnic, external relations that require mediation. Cost of living and the cost of subsistence activities both tend to be higher in industrial centers than in administrative centers.

The serviced rural centers are characterized in the report as almost entirely native centers, and are viewed as being well-suited to the social needs of Indian life (even though unattractive to the white visitor or the urban planner). Compared with the bigger, more planned administrative center, these settlements exhibit greater social cohesion, greater freedom to continue a traditional way of Indian life, and a larger proportion of the well educated Cree who have chosen to return to the North.

The report discussed at length the ways in which the rise of towns in the North (towns whose economy is generally part of the global, metropolitan, market economy of the South) transforms the North, its peoples and their traditional economies. Two ongoing processes are highlighted: 1) the process by which the advent of a metropolitan, market economy tends to impoverish the hinterland within which traditional native activity takes place, and 2) the process by which current economic problems of natives in towns follow directly upon their desertion of the hinterland (i.e. their integration into and further dependence upon a locally inadequate market economy).

The second urbanization process identified above is stated to have several distinct facets: 1) the hinterland no longer permits subsistence activity at a level sufficient to provide for the needs of its inhabitants; 2) the activities providing a cash income limit the amount of time remaining to be spent in subsistence activities; 3) integration into a cash economy involves (with certain exceptions) individual natives rather than corporate groups above the family level; 4) the fact that the above urban processes occur within the context of a cash economy not designed to offer employment to natives (eg. urban centers draw to themselves populations not considered by planners, whose plans did not call for jobs to employ "squatters").

The report stated that James Bay communities have not yet followed the traditional urbanization process wherein natives tend to move "from independent marginal subsistence economies to poverty in the terms of our society" (8, page 143).

The report evaluated the pattern of urban development expected if present conditions continue to prevail without the hydro project. The report also specifically discussed urban development in the region that would be associated with the hydro project, noting that at the peak of construction activity from 12,500 to 56,500 new residents could be expected to move into the region as a result of employment created by the project. (The range reflected uncertainty as to how many workers would move accompanied by average sized families.)

In discussing urban development with the hydro project, the report reviewed current and previous northern planning under the following headings:

a) Traditional View of Northern and Single-Enterprise Industrial Centers - this section reviewed the literature (mostly on mining communities) describing this type of center.

b) The Present State of Planning in the North This section reviewed the many planning objectives which often exist and are often incompatible with each other: 1) to exploit local resources efficiently, 2) to satisfy and keep stable the labour force required to exploit these resources, 3) to create towns that are aesthetically pleasing, 4) to create towns that are "economical" to build and maintain, 5) to create towns that are acceptable in terms of engineering requirements, 6) to create towns that will not turn into ghost towns, and 7) to create towns free from "blight", slums and squatting. The report contended that, as well as being incompatible, the above objectives can in themselves cause typical urban development problems for natives.

c) The Plight of Planned Towns Today

This section argued that the failure of planning must be attributed largely to the failure of planners (who have failed to give adequate attention to the interactions among separate objectives, to the underlying assumptions of their planning, and to the special urbanization problems in the North) rather than to be blamed entirely on squatters, resource depletion and other factors "outside the responsibility" of planners. For example, planning has failed to recognize as inevitable that untrained, unemployed persons would migrate to a townsite in the hope of finding employment (eg. shack towns and squatters). Similarly, by failing to account for the destructive effects of urbanization on the hinterland, planning in itself can condemn new towns to become ghost towns.

d) Rethinking Northern Development

This section outlined key features that must be incorporated into future northern urban planning: 1) towns do not exist in isolation, but as nodes of a structured hinterland having definite relationships to other towns (i.e. urbanization refers to a society, not merely its population concentrations); 2) urban growth can alter a region's present town organization -- planning must ask: "How is a new population, or any new towns built to house it, going to fit into or change the existing structural organization of the hinterland and other towns in the region?" 3) all developmental inputs do not come from external sources -- those that come from internal sources must not be wasted or needlessly destroyed. The section noted that problems of aesthetics are relative -- development desired by the natives and most suited to the natives can be seen as inefficient and lacking in aesthetics by outside planners. In general,the section suggested that it may be necessary to relax traditional planning principles rather than to apply them more vigorously.

e) Unplanned and Planned Development
Planning is seen to be most clearly appropriate for the camps built at construction sites; internal growth of existing towns, however, is thought best left for "natural" or unplanned development. Three sorts of "base town" are considered necessary during the construction phase: 1) a regional operations center (necessarily located near the new airport) 2) a recreation center for construction personnel 3) a staging base of materials. The report argued against any push towards centralization (negative consequences for smaller native centers), and outlined many aspects necessary to consider for recreational facilities. The report argued that "shacks" or older buildings are often needed if development is to occur (such facilities permit major capital investment by the local population using their labour and their savings). The report also noted the sorts of service industry in the smallest centers that the road and hydro development may cause (eg. maintenance teams, safety and first aid patrols, fire prevention groups, gas stations, restaurants, tourist camps, motels etc.) -- none is likely to be of sufficient size to be viable as the sole income of a large settlement, but all could provide the marginal cash income needed to convert a primarily self-supporting hunting economy into one that can obtain imported manufactured goods and can enjoy services from the towns. Concerning the last item, the report argued that those activities (and the land along the roads) should be placed firmly in Indian hands.

Given that its focus is on existing sociological/ecological studies, the urbanization chapter of the Salisbury report parallels the summaries provided earlier in this literature review on the impact of relocation of communities on native people (eg. Inuvik). Similarly, the discussion on the failure of southern planning concepts to fit the needs of indigenous residents in single enterprise/industrial centers has also been mentioned.

In conclusion, the Salisbury report argued that heavy emphasis on "planned" development in conjunction with the James Bay project will necessarily imply centralization, with consequent adverse effects (in both private and public sectors) on smaller communities which are predominantly Indian in character (8, page 161). As a result, the report recommended that Indians be provided with some control over local land use, especially in the areas of administrative and education functions, recreational facilities and material supply bases.

3.2 The Rampart Canyon Dam Project

The hydro-electric potential of Alaska has long been recognized as one of the state's most valuable assets. In 1968, for example, the Federal Field Committee for Development Planning in Alaska suggested a firm energy potential of some 161 billion kilowatt hours at 76 of Alaska's more attractive power sites. At that time, this energy potential represented an estimated 34 per cent of the identified undeveloped hydro-electric potential in the United States (11, page 332).

The hydro-electric potential of Alaska, and in particular that of the Rampart Canyon Dam site on the Yukon River, did not go unnoticed by the United States Army Corps of Engineers. During the 1960's, the Corps proposed to develop this particular site to the extent of 34.2 billion kilowatt hours of energy production per year. The project, however, involved the creation of a reservoir 280 miles long and 80 miles wide with a total water surface area of about 10,600 square miles, as well as construction expenditures of at least 2 billion dollars (32, page IX).

It was obvious, of course, that this project was not proposed to satisfy local energy requirements -- average annual energy production at the site was estimated to be about three times the total energy use in both the local and southeast Alaska markets during the mid-sixties. Initially, however, the proposal was received very favourably, on the basis of the following assumptions:

(1) That the Rampart Canyon Dam project would attract to Alaska new, power-intensive electro process industries utilizing large blocks of power (aluminum production alone was estimated at 600 thousand to 1.2 million short tons per year).

(2) that project power could be marketed in the Pacific northwest states.

Subsequently, both of these assumptions were overturned, and in a report issued in June 1967, the United States Department of the Interior rejected the proposal. The Department noted that studies prepared by the Bureau of Mines and the Bureau of Reclamation had established the Rampart Canyon project power rates (under the most favourable assumptions of power loads, project costs, and debt repayment) to be about 4 mills per kilowatt hour at tidewater without fish and wildlife mitigation costs, 6 mills with such costs.

Thus, they would be too high to attract the assumed aluminum production to Alaska. In addition, other studies established that transmission costs precluded the marketing of project power in the Pacific northwest (32, page IX).

The inclusion of fish and wildlife losses in project costs obviously had a significant impact on the project decision. The Department of the Interior report commented that (32, pages 35-36):

> "Nowhere in the history of water development in North America have the fish and wildlife losses anticipated to result from a single proposed project been so overwhelming. The effects of the project on anadromous fish would be felt not only in Alaska but in Canada. The losses to the water fowl population would extend to Canada, the United States and Mexico."

Indeed, the report estimated that the project would result in an estimated annual wildlife loss of 1.5 million ducks, 12,800 geese, 10,000 cranes, 20,000 grebes, 13,000 moose, and 3.6 million commercial fur animals. The annual loss in the anadromous fish population was estimated at between 231,300 and 430,000 (the reservoir itself would have had potential for commercial fresh water fishing, but only after 35-50 years had elapsed since filling).

The impact of the Rampart Canyon Dam project on the native population in the area was given only scant attention. It was estimated, however, that (32, page 25):

(1) The reservoir would inundate the hunting and fishing areas of nine villages in the Yukon flats area

(current population of 1,200 persons; 1990 population estimated at 3,000 persons)

(2) the project would affect the livelihood of some 5,000 to 6,000 natives residing elsewhere in the Yukon River basin, by reducing salmon runs in the river.

Some benefits to the native people accruing from the project were, however, noted as well, namely the creation of construction and permanent jobs in the project area and elsewhere in the state. These jobs, it was anticipated, would have the effect of releasing these people from their present subsistence-earning-trapping-relief cycle.

Unfortunately, the discussion of native people did not provide any precise estimates of (a) income losses and income gains from the project, (b) skill levels of the native population, (c) spatial and temporal incidence of construction and permanent jobs, or (d) the degree to which native people would be successful in obtaining these positions. In addition, the report made only passing reference to other competing uses of the water resources involved -- uses such as recreation, navigation, and municipal/ industrial supply (all of which are mentioned in the 1968 Federal Field Committee report).

3.3 Kinzua Dam Project

In the early 1960's, the Army Corps of Engineers initiated construction of the Kinzua Dam, as part of its Alleghany River project. The construction of this dam involved the flooding of certain lands belonging to the Seneca Indian nation on the Alleghany Indian Reservation in New York state. The Seneca nation and the Army Corps of Engineers were unable to agree on the exact amount of compensation required as the result of flooding, and the issue was ultimately referred to the United States Congress for final settlement. The Kinzua Dam project is the subject of a House of Representatives report, a Senate report (88th Congress) and a Department of the Interior report.

As noted in the House of Representatives report, the Kinzua Dam project required an expenditure of approximately 107 million dollars for construction, and exclusive of certain compensation costs, had a benefit/cost ratio of 2.1 (33, page 6). It was estimated that the Kinzua Dam would affect approximately 9,100 acres of dry land and 1,100 acres of river channel land within the Alleghany Indian Reservation -- roughly one-third of total land and water area of the reservation. As a result, there would be left only about 8,500 acres of dry land for permanent and unrestricted use by members of the tribe; much of this land, however, would either be so hilly or so isolated by the reservoir as to be of little use to the inhabitants.

A June, 1962 survey of the reserve established that there were 482 Seneca Indians (130 households) living within the reservoir area that would need to relocate. These Indians represented 16 per cent of the 2,976 enrolled members of the Seneca nation living on the reserve or 12 per cent of entire band membership. Of the 482 Indians, 145 were classified as fully employable adults, 38 of which were female (housewives and mothers of small children not seeking work were excluded). At the time of the survey, 80 males and 30 females were employed -- only eight, however, were to be directly affected by the use of Seneca land for the Alleghany project. The survey further established that average per capita income of the Senecas residing within the project area was $1,002. -- which may be compared to the per capita incomes of $260. and $319. for two tribes (Crow Creek and Lower Brule Sioux respectively) which had earlier received legislative settlements for lands taken for flood control purposes in the Missouri River basin (34, page 37).

The compensation settlement received by the Seneca nation was comprised of the following items:

(1) Direct Damages $1,289,060.

> Costs here included $666,285. for acquisition of flowage easements (the usual practice was for the Army Corps of Engineers to acquire fee title to land), $522,775. for other permanent improvements, and $100,000. for possible loss of oil and gas resources. All these costs were agreed upon after consultation and negotiation between the Army Corps of Engineers and the Seneca nation, with these payments representing fair market value for real estate taken.

(2) Indirect Damages $824,273.

Although the Seneca nation had originally claimed $1,242,250. for indirect damages and the House Committee had awarded $1,033,275, the Senate Committee -- on the basis of earlier legislative settlements -- ultimately settled upon a payment of $824,273. This payment included $691,625. for loss of timber, wildlife, etc., $127,050 for certain relocation costs, and $5,598. for the loss of the river bottom (34, page 5). It may be noted here that in the United States indirect damage payments are not required by law, but appear to be justified by other considerations (38, page 51).

(3) Rehabilitation $6,116,550.

The House Committee had originally awarded $20,150,000. for the purposes of rehabilitation, but this payment was reduced to $6,116,550. by the Senate Committee. Major modifications were as follows:

(a) Agricultural, commercial, recreational and industrial development -- the House Committee awarded 12.44 million dollars to the Seneca nation on these accounts, but the Senate rejected these appropriations entirely, arguing that projects of this size could not be justified on the basis of the loss the Senecas will sustain as the result of the Kinzua Dam. In particular, the Senate Committee objected to a Williamsburg-type Indian village proposal, for which construction costs were estimated at 7.1 million dollars (34, page 7).
(b) Resurvey of villages -- the Senate Committee rejected the House allocation of $194,000. for this purpose -- again on the basis that this expenditure was not directly related to the Kinzua Dam project (34, page 7).
(c) Educational programmes -- the House Committee had approved 2.3 million dollars for these programmes, but the Senate argued, on the basis of the Crow Creek and Lower Brule settlements, that payments here should amount to $2,250. for the 1,103 Indians residing on the Alleghany Reservation and $1,200. for all other Seneca Indians (34, page 7).

It should be pointed out here that the rehabilitation settlement arrived at through legislative enactment had no other basis in law. Rehabilitation funds have been described as (38, page 51):

> ".... gratuities rather than payments for damages. Nevertheless, authorizations of these funds have been associated with the taking of Indian land. They were intended to be used to assist in re-establishing and improving economic and social conditions."

Clearly, several precedences were observed by Congress in arriving at a legislative settlement of the Kinzua Dam compensation dispute. In particular, heavy reliance was placed upon earlier rehabilitation awards (varying from $1,200. - $2,250. per enrolled member) to arrive at a basis for such a settlement. Rehabilitation and other awards for six Indian reservations (including the Seneca nation) are documented in Table 4 attached. Total settlements in this case varied from $1,992. per enrolled member of the Seneca nation to $5,691 per enrolled member of the Fort Berthold tribe.

TABLE 4

Data Relating to Settlements for Indian Lands Acquired For Reservoirs on Six Indian Reservations

(dollars)

	Fort Berthold	Cheyenne River	Standing Rock	Crow Creek	Lower Brule	Seneca Nation
Direct Damages	3,745,000.	2,250,000.	1,952,000.	880,000.	1,181,000.	1,289,000.
Indirect Damages						
- loss of timber, wildlife etc.	2,989,000.	1,603,000.	2,573,000.	855,000.	764,000.	692,000.
- relocation	1,897,000.	1,531,000.	727,000.	225,000.	259,000.	127,000.
- loss of river bed	-	-	-	-	-	6,000.
Sub total Indirect Damages	4,886,000.	3,134,000.	3,300,000.	1,080,000.	1,023,000.	824,000.
Rehabilitation[a]	3,975,000.	5,160,000.	6,960,000.	3,803,000.	1,969,000.	6,617,000.
Total Settlement	$12,606,000.	10,644,000.	12,347,000.	5,938,000.	4,348,000.	8,230,000.
Per Capita Settlements						
Rehabilitation[a]						
Resident Population	2,070	2,253	1,989	4,216	4,600	5,999
Total Enrolled Population	1,795	1,198	1,313	2,250	2,250	1,601
Total Settlement						
Resident Population	6,566	4,648	3,528	6,583	10,159	7,461
Total Enrolled Population	5,691	2,471	2,330	3,514	4,969	1,992

[a] Includes tribal expenses and attorney fees.

Source: United States Department of the Interior, Seneca Indians Who Will Be Affected by the Kinzua Dam Reservoir (Billings, Montana:1963); United States Senate, Miscellaneous Reports on Public Bills, Report #969, (88th Congress, 2nd Session).

4. Impact of Pipelines and Transport Systems in the Northern Regions of North America

Acres Consulting Services has ascertained that considerable research is now being conducted by various government agencies and private consortia on the likely impact of pipelines and transport systems on the norther regions of North America. Unfortunately, many of the reports completed on this and related topics have not been made public, while studies still in progress obviously cannot be reviewed at this stage.

This report, then, focuses on four reports that are readily available for review and study. Two of these reports were recently completed by Gemini North of Yellowknife, while the other two documents are the products of University research, being published under the auspices of the Canadian Institute for Guided Ground Transportation (Queen's University) and the Institute of Social, Economic and Government Research (University of Alaska) respectively. All reports discuss directly or indirectly the impact of activities aimed at exploiting the oil discoveries at Prudhoe Bay and elsewhere in the Arctic.

When these four reports are evaluated in terms of research frameworks, an obvious inconsistency can be observed between the two Gemini North reports and the two University reports. The latter reports have in essence focused on the broader questions raised by alternate proposals to move oil from Prudhoe Bay to major

North American markets, and thus have virtually ignored any *detailed* considerations pertaining to the social and economic impact of such projects on northern native residents. The University of Alaska study has a particular twist here, in that development options are closely intertwined with Alaska native land claims.

In contrast to the University reports, the Gemini North reports clearly have accepted certain project proposals as datum. This approach is particularly clear in the case of their evaluation of the Fort Simpson-Norman Wells Transportation Corridor -- the task here has been more to evaluate selected impacts on communities in the region than to evaluate project feasibility *per se*. With reference to settlement labour pools, however, such an assumption is not nearly so obvious, since the concept of the labour pool can embrace a myriad of activities in a community. The continued involvement of Gemini North in this project, however, does provide some indication of the significance that the government attaches to labour pools in overcoming those manpower problems which would likely be encountered in constructing pipeline and transport systems along the MacKenzie Valley in the Northwest Territories. (It is interesting to note that discussions of labour pools are conducted within a community specific framework.)

On balance, then, all four reports reviewed do suffer some shortcomings in research framework, i.e. to the extent that project feasibility is examined, detailed considerations of impacts on native people have been given only secondary attention, and to the extent that direct impacts are of primary importance, overall project feasibility is not of major concern.

4.1 Fort Simpson-Norman Wells Region Transportation Corridor

The concept of a transportation corridor (incorporating oil and gas pipeline facilities) in the MacKenzie Valley of the Northwest Territories was the subject of a 1971 report prepared by Gemini North of Yellowknife. The study was in essence a preliminary evaluation of the impact of a transportation corridor on five communities in the region: Fort Simpson, Wrigley, Fort Norman, Norman Wells and Fort Franklin. Given that the report made only limited reference to data, it clearly is more descriptive than comprehensive in nature.

The Gemini North report analyzed the native and non-native population of these five communities and, to a lesser extent, their labour force and social/commercial infrastructure. In addition, comments were forthcoming with respect to (a) fur production in the region and (b) caribou and moose take. The following general statements in essence summarize the report:

(1) the opening of a winter lease road to Norman Wells has apparently had no direct impact on food prices (14, page 26)

(2) great care must be taken in construction of a transportation corridor to avoid damage to the fur producing areas of the Liard watershed and Great Bear River (14, page 43).

(3) construction activity and the establishment of operating centres at Fort Simpson and Norman Wells would require considerable improvement in infrastructure in these communities, including education facilities (14, page 55).

(4) in order to achieve a higher degree of local participation in contracting services, a consolidation of effort and services on the part of the smaller contractors in these communities has been suggested (14, page 69).

(5) monitor programmes for fishing and hunting activities during the construction phase would be necessary if fish and game populations are to be maintained (14, page 70).

(6) proper inventory and other planning would be necessary if businesses are to ensure adequate flows of supplies and services during the construction period (14, page 70).

(7) wage and price inflation during the construction phase may be expected in these communities; in particular, service industries would suffer from wage inflation (14, page 70).

The Gemini North report, however, provided no estimates of possible resource losses or gains arising from construction of the corridor; nor does it discuss directly the employment and income impact of the corridor on the five communities noted previously. In other words, the Gemini North report provides little guidance with respect to the detailed commentary necessary for completion of Study Board assignments.

4.2 Settlement Council Labour Pools

In November, 1971, Gemini North was commissioned by both the Government of the Northwest Territories and the Department of Indian Affairs and Northern Development to conduct a study to determine the feasibility of mobilizing, through organized labour pools, the employable male labour force in specified MacKenzie Valley settlements. In particular, the following communities were specified: Tuktoyaktuk, Aklavik, Inuvik, Fort Good Hope, Fort McPherson, Fort Norman, Fort Franklin and Arctic Red River.

This study involved two discrete research tasks of interest to the Study Board programme:

(1) a survey of the above communities (neither Inuvik or Arctic Red River was surveyed extensively), in order to ascertain population, potential labour force, effective labour force (and participation rates), extent of unemployment by season, and incidence of full-time wage employment, living off the land and part-time wage employment in each community; results were then compared with the earlier DIAND computer survey,

(2) a survey of 178 companies (37 companies replied) which had previously operated in the lower MacKenzie Valley, in order to ascertain manpower requirements of a cross section of employers.

In completing the first task noted above, Gemini North compiled 30 tables of its own on the eight communities surveyed, as well as examining 19 tables prepared under the auspices of the DIAND Manpower Survey. None of these 49 tables is reproduced here, but the following constitute the major conclusions emerging from this analysis (15, Volume I, pages 20-23).

- the potential male labour force is estimated to be 1,621 or 27 per cent of the estimated total population
- the effective male labour force (those actively available for employment) is estimated to be between 20 and 23 per cent of the total population, depending on the season
- the unemployment rate in these settlements (between two per cent and 61 per cent, depending on the season) is far greater than in Inuvik, which can be considered to have zero unemployment
- the number of males seasonally unemployed and available for work varies from 10 to 335 on a seasonal basis
- each settlement has distinct regional employment characteristics
- in most settlements, there is a trapping economy which is distinct and separate from a wage employment; men occupied in trapping are not normally available for wage employment
- the number of males living permanently off the land is estimated at 48
- in some settlements, there is a hard core of males of working age who are not willing to work at either trapping or wage employment
- settlement male participation rates appear to vary directly with exposure to wage employment
- the participation rate for females is low; of the 1,120 females of working age, only 10-29 per cent were working at full or part-time jobs
- with the exception of Inuvik, most of the male labour force is employed on a part-time basis only
- in the six communities extensively surveyed, only between six and 30 per cent of the effective labour force is permanently employed

- with the exception of Inuvik, most job opportunities exist outside the communities; demand for labour within a community usually depends on government financed activities
- given that the DIAND survey and Gemini North survey were taken at different points in time, some bias has probably been introduced into survey results
- the DIAND survey reported less than a 100 per cent response, with coverage less than 75 per cent in Fort McPherson and Inuvik; native (other than Metis) response was particularly poor in Fort McPherson and Fort Norman.

The replies by employers to the Gemini North survey prompted the following conclusions (15, Volume I, pages 43-44):

- most hiring is now down through Canada Manpower offices, job applications and job interviews, either in the settlements or at another location
- many companies assess the rehiring of native personnel who leave without notice on an individual case basis
- most companies require job histories for unskilled jobs
- the major problems in hiring northern personnel are absenteeism, alcoholism, high turnover and lack of skills
- in general, unskilled jobs are feasible for rotation, skilled jobs unfeasible for rotation
- most employers would use a labour pool if it was free of charge. The respondents were split equally for and against the use of a surcharge on the labour pool.

The bulk of this report is, of course, concerned with the attitudes of the communities towards labour pools, and with the actual problems that might be encountered in implementing such pools on a community basis (all communities rejected the concept of a centralized labour pool serving the region). As such, much of the discussion in this particular study is again beyond the terms of reference of the September 8, 1972 Memorandum of Agreement. Nevertheless, it should be stated that the concept of settlement labour pools appears to have been accepted by the government agencies concerned -- Gemini North is involved at present in extended work on this topic.

4.3 Arctic Railway Proposal

The Prudhoe Bay oil discovery in Alaska in 1968, plus subsequent gas and oil finds in the Arctic, have prompted considerable discussion and research on the engineering, economic and political feasibility of constructing transport facilities to move these fuels to major consumer markets in North America. A Trans-Alaska Pipeline to move oil from Prudhoe Bay to Valdez has, for example, been proposed[16] while certain Canadian interests have championed the notion of an oil and gas pipeline corridor down the MacKenzie Valley and ultimately to United States and Canadian markets.

A recent report by the Canadian Institute of Guided Ground Transport at Queen's University has, however, suggested yet another alternative for the movement of oil from the Alaska north slope and other locations: construction of a railway to carry the oil to market (the report conceded that the railway would not be a practical mode to transmit gas). According to the Institute, the rationale for a railway rather than a pipeline is as follows:

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[16] See also section 4.4.

(1) the likelihood of serious ecological damage resulting from construction and maintenance of an oil pipeline, particularly in discontinuous permafrost zones where' the occurrence of frozen ground is intermittent, ground temperatures are near thawing and the ground thermal regime is very sensitive to any disturbance (4, page 5).

(2) the added ecological danger in the case of the Valdez pipeline arising from transportation of oil by sea (4, page 4).

(3) the relevance and accessibility of the central continental market (District II), as opposed to the west coast market (District V); existing pipelines in the Prairie provinces are already capable of serving District II (4, page 4).

Although the technical aspects of the proposal by the Institute will not be examined in detail here, it may be pertinent to note that the report favoured the most easterly route of the three routes examined -- from Prudhoe Bay to the southern terminus of Trout River. This route, it was argued, avoids major caribou migration routes, minimizes construction and operation costs, and simplifies the extension of branch lines into the Shield country (4, page 10).

The railway facilities themselves are not expected to have any major ecological impacts upon the surrounding territory, as the result of (a) rather narrow roadbed and clearance requirements and (b) the absence of major marshalling yards between the two terminals (since trains would essentially be operated on a unit basis). At the southern terminal, however, perhaps two square miles would be required for facilities to accommodate loading and unloading operations, switching, storage of oil and rolling stock, repair and maintenance operations and administration. In addition, the report anticipated a town of 10,000 to 20,000 springing up near the terminal area to service its needs (4, page 14).

Evaluation of this project by the Institute was, however, almost entirely at the macro level. The report suggested that movement of oil by rail would have a considerable cost advantage over other modes, but that no precise comparisons could be provided at the time of report preparation. Certain secondary benefits, though, could be identified:

- direct job creation in construction and operating phases
- stimulation of other industry in the region
- indirect job creation in supply and service industries
- other savings to existing companies and communities through reduction in transportation costs

In discussing the construction phase of activity, the report suggested that if construction had begun in the spring of 1972, 10,000 men would have been employed in actual railway system and related static installation work by 1974, with this total gradually tapering off to 1,000 men in 1977. In addition, other jobs would be created in transporting material and in constructing normal facilities for a town at the Trout River terminus.[17]

The railway facility itself would be expected to generate 4,500 primary jobs in moving oil from Prudhoe Bay to Trout River, plus a further 5,000 jobs in the auxiliary function of transporting conventional freight and non-petroleum products (4, page 53). With reference to the latter activities, the report anticipated that the railway might lead to additional mineral exploration and development in the region, such as at Snake River, (4, page 57), and to sharp declines (on the order of 50 per cent) in transport rates for existing traffic (4, page 58).

Overall, the project was assumed to generate 50,000 secondary jobs in Canadian industry during the construction phase, and some 15,000 permanent jobs thereafter. The latter figure implies an employment multiplier of 4.0, utilizing the original estimate of 5,000 jobs directly tied to the movement of oil by rail.[18]

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[17] The estimated population at the Trout River terminus was based upon the following assumptions: (a) 5,000 permanent jobs in railway related functions (oil and other freight), (b) a "conservative" service/basic worker ratio of one, and (c) an average family size of 3.5, with 75 per cent of the labour force married (4, pages 53-54).

[18] These estimates assumed that half of the materials and four fifths of the labour force will be supplied by Canada.

To the extent that the regional implications of this development have been assessed, the report has restricted its comments to a consideration of direct employment impact that this project would likely have on the native labour force. Thus, without any detailed analysis presented, the report assumed that some 800 construction positions could be provided almost immediately to locally situated labour, with a minimum of 1,200 additional jobs being available after initial training (4, page 53). The report argued, moreover, that since skills and experience in living and working under a harsh Arctic environment would be of particular value to a railway operation, there would exist considerable opportunity for the transfer of employees from construction crews to maintenance crews (4, page 63). The report did not, however, comment directly on problems of relocation of individuals, upgrading of skills or of minimum requirements associated with entry into particular employment classifications. Nor, moreover, were any estimates provided on the impact of such employment on the incomes of native people within the region -- or indeed of their opportunity to participate in the supply and service sectors which would spring up as the result of railway construction and operations. In other words, it is clear that the Institute's report had a national focus, with detailed considerations of regional and community impact being far beyond its principal terms of reference.

4.4 Alaskan Pipeline Project

In recent years, numerous reports and articles have been prepared on the social and economic status of the Alaskan native in relation to the white population. In particular, the work of the Federal Field Committee for Development Planning in Alaska has provided a compendium of information on the status of the native, revealing (among other factors) high birth and death rates, a significant concentration of native population in rural Alaskan villages,[19] low and seasonal incomes, high prices[20] and sub-standard housing (11, page 71). In such an environment, it is not surprising that the discovery of oil at Prudhoe Bay in 1968 should generate a number of reports and articles on the possible impact of oil discovery and pipeline construction on the Alaskan native population.

In general, the conclusion advanced with reference to this issue is that oil discovery and pipeline construction *per se* -- both products of an urban/industrial environment -- are unlikely to have a major and beneficial impact on the native population of the state. This conclusion is perhaps put most forcefully by Tussing, who has argued that (30, page 170):

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[19] According to Harrison and Morehouse, over 70 per cent of Alaska's 60,000 native people live in some 180 villages of 25 to 2,500 population, scattered over a half million square miles.

> "Rural poverty and unemployment are among Alaska's most troublesome problems. The state has both the highest unemployment and some of the poorest communities in the United States. These problems have been completely unresponsive to industrial growth in the state and they probably will not be directly affected by the growth of the oil industry. Alaska's unemployment is not really caused by a lack of jobs in the ordinary sense, but by two peculiarities of the state: the existence of seasonal industries such as salmon fishing and construction and a serious mismatch between the education, life style and location of most Alaska natives and those required by the modern industries including government."

This conclusion is further substantiated by a 1971 report on the Trans- Alaska Pipeline proposal, prepared by the University of Alaska's Institute of Social, Economic and Government Research for the Secretary of the United States Department of the Interior. Rather than accepting the usual assumption that a major construction project will act to force down unemployment rates in a region, the Institute argued that the proposed project would probably serve to aggravate the state's unemployment rate -- indeed, the influx of workers into the state in anticipation of major economic activity would likely increase the absolute number of unemployed (29, page 6).

The median population of a native village is approximately 160 (17, page 276).

[20] In 1967, prices in villages ranged to 74 per cent above those prevailing in Seattle, with some items as much as 100 per cent higher (11, page 57).

In these circumstances, the prospect of native people participating significantly in pipeline construction activity is likely to be limited -- especially in light of the estimate by the Institute that oil and gas development in Alaska could draw on a labour force of perhaps 20,000 former oil industry workers in the continental United States (29, page 22). In relation to skills and education, it is clear that the native labour force is at a decided disadvantage in comparison to the more experienced white labour force in competing for jobs in the oil discovery and pipeline construction phase. This situation is of course further complicated by the existence of sub-contracting firms, which maintain their own permanent labour force while being involved in construction phase activity (28, page 185).

Estimates have been obtained of native direct employment which would be provided through actual construction of a pipeline from Prudhoe Bay to Valdez. Reference to Table 5 will indicate that the percentage of native labour involved in such a project would vary from 19 to 20 per cent, with less than one quarter of the labour force in any given project component being native. It should be appreciated, however, that few Alaska natives would be involved in the professional/managerial/technical/clerical aspects of the entire project (29, page 84).

The focus of the discussion on oil activity in Alaska as it pertains to native people has, however, never really been on

TABLE 5

Trans-Alaska Pipeline Facilities Construction:
Direct Employment by Source of Worker

Calendar Year	Project	Total	Alaska Native	Per Cent
		(monthly employment averages)		
1972	Road	1,854	330	17.8
	Pipeline	5,636	1,140	20.2
	Terminal	485	110	22.7
	Pump Stations	537	115	21.4
	Communications	73	15	20.5
	Total	8,585	1,710	19.9
1973	Road	1,854	330	17.8
	Pipeline	5,636	1,140	20.2
	Terminal	485	110	22.7
	Pump Stations	537	115	21.4
	Communications	75	15	20.5
	Total	8,585	1,710	19.9
1974	Pipeline	5,636	1,140	20.2
	Terminal	485	110	22.7
	Pump Stations	537	115	21.4
	Communications	73	15	20.5
	Total	6,731	1,380	20.5

Source: A. R. Tussing, G. W. Rogers, and U. Fischer, Alaska Pipeline Report, Institute of Social, Economic and Government Research (Fairbanks: 1971).

the direct employment and income effects of pipeline construction, operation and maintenance. Rather, the issue of competing land claims submitted by both the natives and the State of Alaska has been of far greater concern. The ownership of land under which oil is located does, of course, have tremendous financial implications, not only in terms of oil royalties per se, but also in terms of oil drilling rights.[21] Given that North Slope petroleum development, production and transportation could possibly generate net revenues to the State of Alaska of $113.5 million in 1975, rising to $380 million in 1990 and $394 million in the year 2000, (29, page 3), it is perhaps understandable why native organizations in Alaska might contest certain state land selections, as had been authorized under the Statehood Act.

The issue of the "land freeze" and of competing land claims was effectively resolved in December, 1971, when the United States Congress and the President approved a bill providing Alaska natives with 40 million acres of land in fee simple title, $462.5 million in Federal appropriations and $500 million in mineral royalties (3, page 3). It should, of course, be pointed out that Alaska natives could still have realized major benefits from oil exploration in the event that had Congress not authorized such a settlement, but this effect would have depended very much on how the state spent its royalty and production tax income, i.e. whether these revenues were disbursed as wages, salaries and transfer payments to Indians and to other groups or were in invested securities or imported capital goods (29, page 78). In other words, it is clear that the "secondary" effects of development are ultimately of greater importance than any direct pipeline construction and operation employment.[22]

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[21] A single competitive sale of drilling rights on the North Slope in September, 1969 yielded the State of Alaska over $900 million (22, page 31).

Unfortunately, no reports examined by the consultants commented directly on the impact of pipeline construction on the villages of Alaska where most natives reside. To the extent that community impacts were discussed at all, attention was focused on urban centers such as Valdez, Anchorage and Fairbanks, where major expenditures for housing, roads, schools and other municipal facilities are anticipated. Little or no attention was paid, for example, to the questions of employment prospects or price inflation in Alaskan villages.

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[22] Much of the royalty and production tax income will of course be generated regardless of the scheme adopted for transporting oil to markets. The importance of any trade off between income and employment is thereby reduced.

APPENDIX A

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